

EMBER 2, 1937

THE IRON AGE



PICKING UP TIN PLATE IN STACKS

TOWMOTOR CLEVELAND Lift Trucks



For nearly two decades TOWMOTOR has set a standard in straight gas-powered Industrial Haulage Equipment. Over 75% of TOWMOTORS shipped are repeat orders from old customers. Lowest cost per year and per ton moved is the answer.

Special types to handle most any commodity

TOWMOTOR COMPANY
1251 EAST THIRD STREET CLEVELAND, OHIO

TRANSPORTING
IN PLATE
STACKS

ONEERING GAS HAULAGE EQUIPMENT SINCE 1919

AG-ENG LIB.

Eng
Ir 6
v. 140
no. 10-18
S.-O.
1937

R A N G E

POWER



Every correctly designed bolted assembly *must* include the only device that possesses *both* sufficient power and range of action to keep parts tight: A Helical Spring Washer of Adequate Size.

SPRING WASHER INDUSTRY
616 WRIGLEY BLDG., CHICAGO, ILL.

ONLY A HELICAL SPRING WASHER HAS ADEQUATE RANGE OF *Live Action!*

2—THE IRON AGE, September 2, 1937

THE IRON AGE, published every Thursday by the CHILTON CO. (INC.). Publication Office, Chestnut & 56th Sts., Philadelphia, Pa. Editorial and Executive Offices, 239 W. 39th St., New York, N. Y. Entered as second class matter November 8, 1932, at the Post Office at Philadelphia under Act of March 3, 1879. \$6.00 a year in U. S., Canada \$8.50, Foreign \$12.00. Vol. 140. No. 10.

m-22

Faster production,

longer tool life

with VisControlled steels

WHEN you use Bethlehem VisControlled steels, whether standard or free-machining, you are all set for high production. You get maximum machinability for any particular specification.

This is because Bethlehem's exclusive VisControl process regulates a part of steel making that has never heretofore been under such complete control—degree of oxidation in the open-hearth. Unless oxidation is accurately controlled, too much deoxidizer may be needed, and excess deoxidizing elements are detrimental to machinability.

Not only does VisControl make possible smaller additions of deoxidizing agents—with improved machinability; it also enables Bethlehem to hold these additions within narrow limits—meaning consistently uniform machinability.

Practically all Bethlehem steels are now made under VisControl. For best machining results—fastest production, best finish, longest tool life—discuss your specifications with a Bethlehem metallurgist. He will utilize the VisControl process to give you the best processing characteristics in the steel you buy.

BETHLEHEM STEEL COMPANY



216921

THE IRON AGE, September 2, 1937—3

**A E T N A —
S T A N D A R D
P I O N E E R E D
B A C K E D - U P
L E V E L L E R S
for PRODUCTION
. . . . WORK**

Three years ago the Backed-Up Roller Leveller was an experiment—Now Aetna-Standard has over fifty successful installations in nineteen steel plants and eight automobile plants. Our experience is available in solving your levelling problems.



THE AETNA-STANDARD ENGINEERING COMPANY
CONSULTANTS • DESIGNERS • BUILDERS
STEEL AND NONFERROUS INDUSTRIES
YOUNGSTOWN " OHIO " U. S. A.

15,000,000 NUTS
FROM DIES OF...
COLONIAL #7

Bureau of Business Research

SEP 2 1937

University of Pittsburgh

IT MAY BE DIES TO
HIM BUT PRODUCTION
LIKE THIS LOOKS LIKE
THE NUTS TO US

And that's not the whole production story, as dies are still producing on .20 to .30 Carbon Hot rolled sheet steel .125 to .130 thickness on presses running at 90 strokes a minute.

ANADIUM-ALLOYS

STEEL COMPANY

LATROBE, PA.

INCREASED SEEING EFFICIENCY AT LESS COST!



Shadows are greatly reduced and all details clearly revealed under Cooper Hewitt mercury vapor light. This modern light means better sight and better production — a boon to management and workers alike.

By adding incandescent lamps to the mercury within the fixture, lighting is obtained that closely resembles daylight values for operations that require perception of color.

The detail-revealing light of mercury vapor is now produced at 22% less cost. And, the new unit hangs horizontally to give the best distribution of the soft, non-fatiguing light which its long lamp provides. Starting is instantaneous. Power factor is high.

Get full details about these improved units. They are made in two sizes: 50 inches long operating at 350-watts; 33 inches long using 275-watts. Bulletin 827 DM illustrates their many advantages for you. Write for a copy. General Electric Vapor Lamp Company, 833 Adams Street, Hoboken, New Jersey.

**GENERAL  ELECTRIC
VAPOR LAMP COMPANY**



TANK REPAIR CREWS PRODUCE NO STEEL

BUSINESS is booming. Orders are piling up. Why take a chance on losing any part of this long-awaited prosperity by installing a pickling tank that might break down, and so jam up your production line. You will get no tonnage from tank repair crews.

Simply specifying a tank of steel, rubber and brick is no insurance against break-down, repairs and leakage. True, this type of construction has become a standard specification, but the fact remains that the rubber-lined pickling tanks with the long, successful records of safe and profitable performance are all Goodrich Tanks.

Five years ago Goodrich developed

Triflex lining, Triflex expansion joints and brick sheathing. It was these features plus the Vulcalock process of attaching rubber to steel which made possible the modern rubber-lined pickling tank. This is the tank which freed the pickling room from repairs and acid losses, increased production by ending break-downs, and lowered costs by eliminating leakage. Materials alone don't make a dependable pickling tank . . . proven, successful experience is one of the most vital factors for certain success.

You who know steel know how important continuous production is today. In 27 modern pickling lines

Goodrich Tanks are assuring continuous operation, free from dangerous acid leaks, costly repairs, embarrassing shut-downs. Specify Goodrich and you specify more and *certain* production for years, at lower pickling cost. The B. F. Goodrich Company, Mechanical Rubber Goods Division, Akron, Ohio. (In Canada: Canadian Goodrich Company, Ltd., Kitchener, Ontario.)

Goodrich
ALL *products* *problem* IN RUBBER

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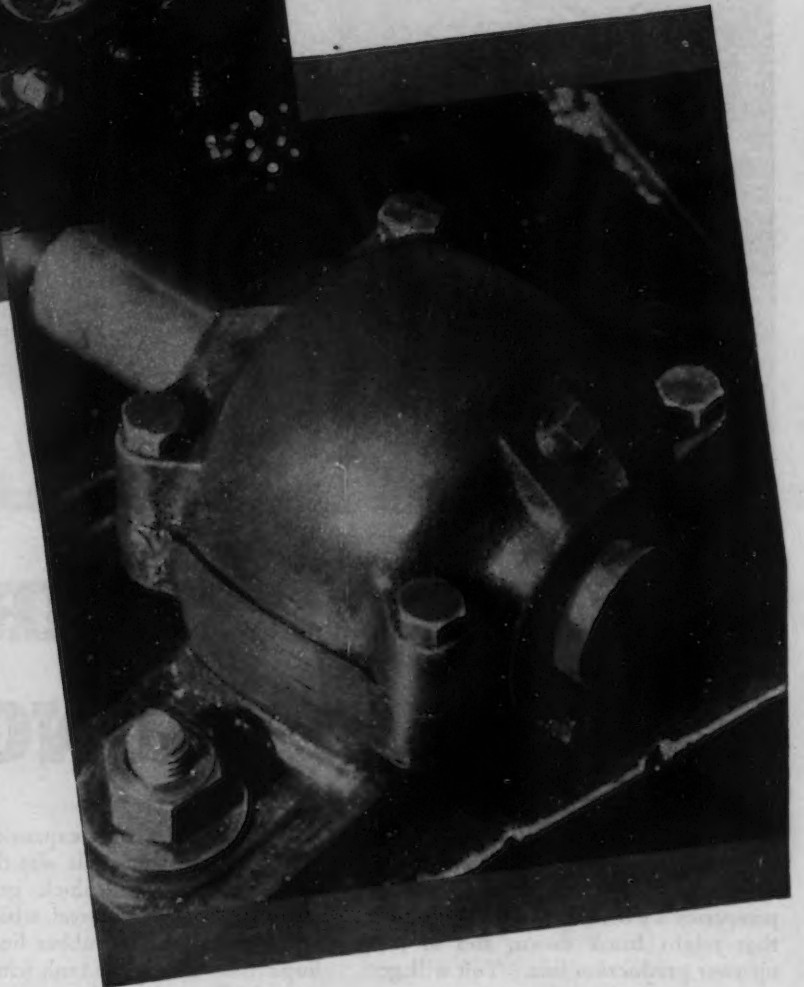
THE IRON AGE, September 2, 1937—7

Anti-

When you use Texaco Starfak, you get the full savings built into anti-friction bearings by their makers. You save power, down-time, replacement costs.



For HEAVY-DUTY ANTI-FRICTION BEARINGS—You'll get longer service from them by lubricating them with **TEXACO MARFAK**. Under heavy rolling loads, Marfak liquefies, forming a tough film. At the same time it remains plastic at edges of bearing, to seal it against leakage and foreign matter.



TEXACO

friction

...year after year!

YOU get the lower starting and running torque that means lower power bills... maintain the highly-polished surfaces of your high-speed anti-friction bearings—when you use Texaco Starfak.

Texaco Starfak required years to perfect. Made expressly for high-speed ball and roller bearings. Coats polished parts with lubricating film that's extremely stable, despite high operating temperatures and speeds.

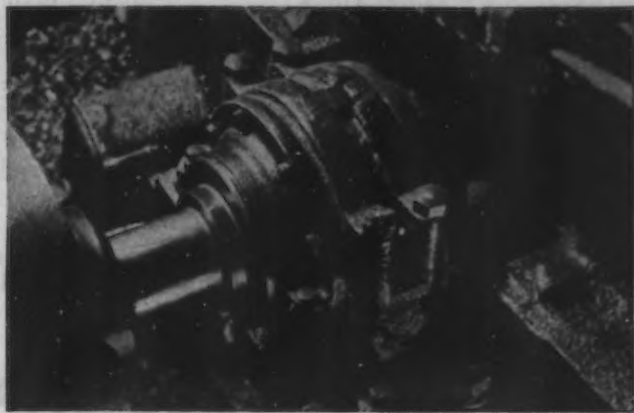
Many anti-friction bearing lubricants oxidize, break down, separate,

leaving non-lubricating residue which may cause bearing failure. Others entrain air, forcing themselves out of the bearing.

Trained lubrication engineers are available for consultation on the selection and application of Texaco Petroleum Products. Prompt deliveries assured through 2070 warehouse plants throughout the U. S.

Switch to Starfak, and *keep* your bearings *anti-friction*.

The Texas Company, 135 East 42nd Street, New York City.

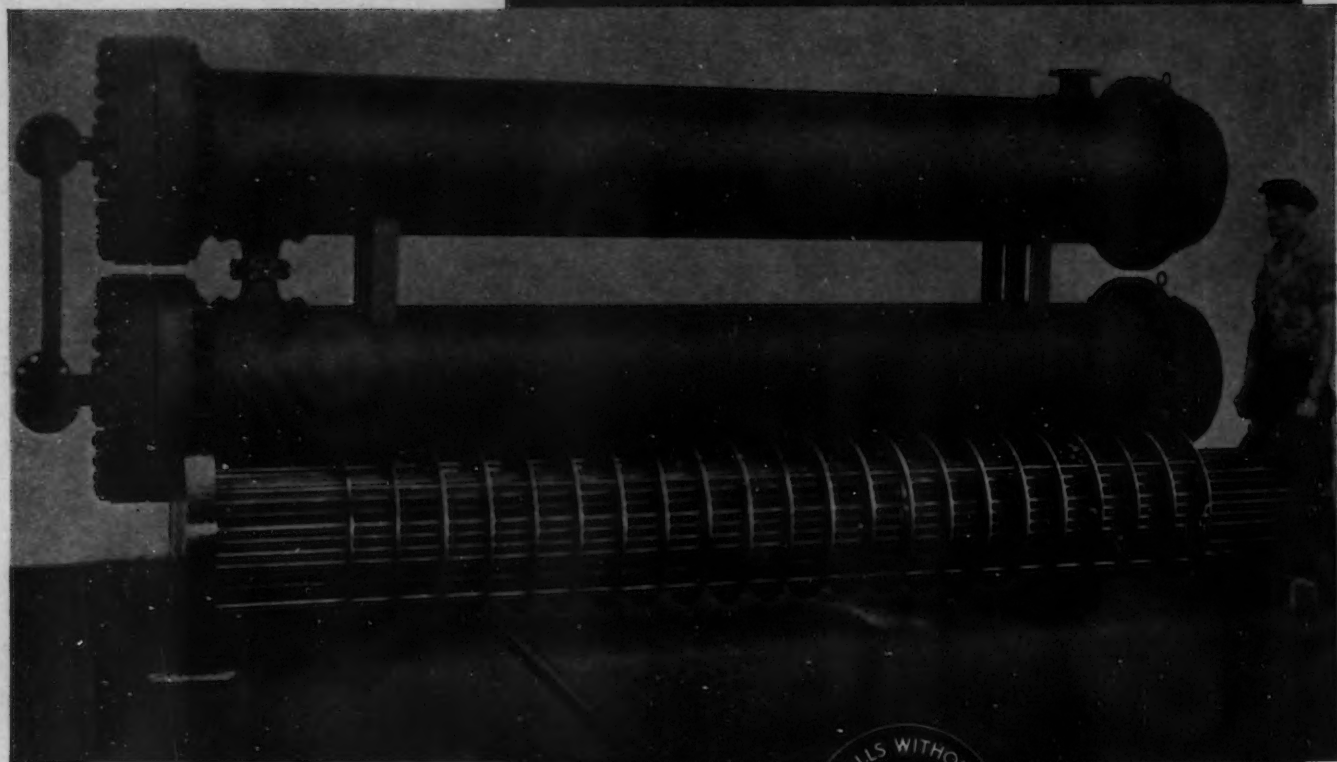


You get top performance from high-speed anti-friction bearings only when you use lubricant made especially for their peculiar operating conditions. Texaco Starfak maintains its high lubricating qualities . . . doesn't separate.

STARFAK

Here's how to Cut

HEAT EXCHANGER MAINTENANCE



IT'S not the cost of new tubes that makes the plant engineer shake his head. It's the cost and the delay of opening up the exchanger, inserting the new tubes, and then re-assembling and reconnecting the exchanger—these are jobs that eat heavily into any plant maintenance appropriation.

Wise power-plant engineers have found a method of keeping down maintenance costs on heat exchangers—by standardizing on the finest seamless tubes that modern metallurgy has produced to date—NATIONAL Seam-

less Heat Exchanger Tubes.

Ask any power-plant engineer who has used them and he'll tell you they can't be beaten for real economy . . . that they save money by eliminating frequent replacements and cutting out idle time.

NATIONAL Tubes offer you these savings because they are seamless—pierced from a solid billet of finest quality steel—uniform wall-strength throughout. They have no welds—

no line of possible weakness. Each tube receives a final heat treatment, which makes it easy to bend, flange, coil, or expand into headers.

NATIONAL Heat Exchanger Tubes are furnished in different analyses of steel, depending on the service requirements.

Our engineers will gladly consider your requirements and recommend the best analysis for service in your plant. Write our nearest sales office.

NATIONAL TUBE COMPANY

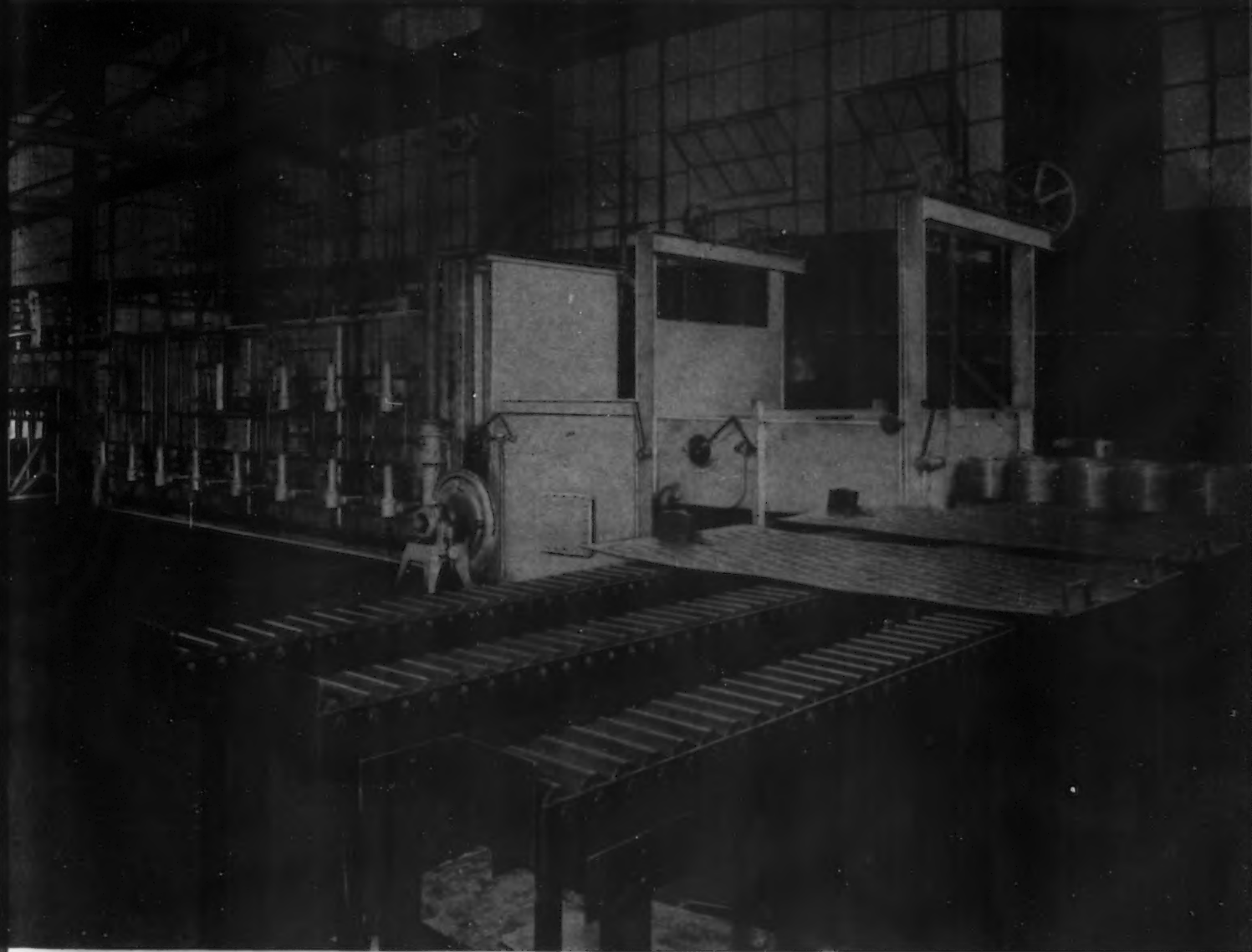
PITTSBURGH, PA.



Columbia Steel Company, San Francisco, Pacific Coast Distributors • United States Steel Products Company, New York, Export Distributors

UNITED STATES STEEL

BRIGHT ANNEALING WITH RADIANT HEATING ELEMENTS



● Startling to some, significant to all, the SC gas-fired *radiant heating element* applied to heat treating furnaces opens an entirely new range of possibilities for that most flexible of fuels, and generally the cheapest-gas. Virtually every one of the largest copper and brass fabricators now has Surface Combustion equipment similar to the pan-type gas-fired annealing furnace shown above—equipped with SC gas-fired *radiant heating elements*.

In addition to non-ferrous furnaces numerous other installations of the gas-fired *radiant heating element* have been made in the ferrous industry for hardening, annealing,

spheroidizing and malleableizing—in the ceramic industry for enameling and in the chemical industry for high temperature processes where the products of combustion cannot be allowed to come into contact with the work.

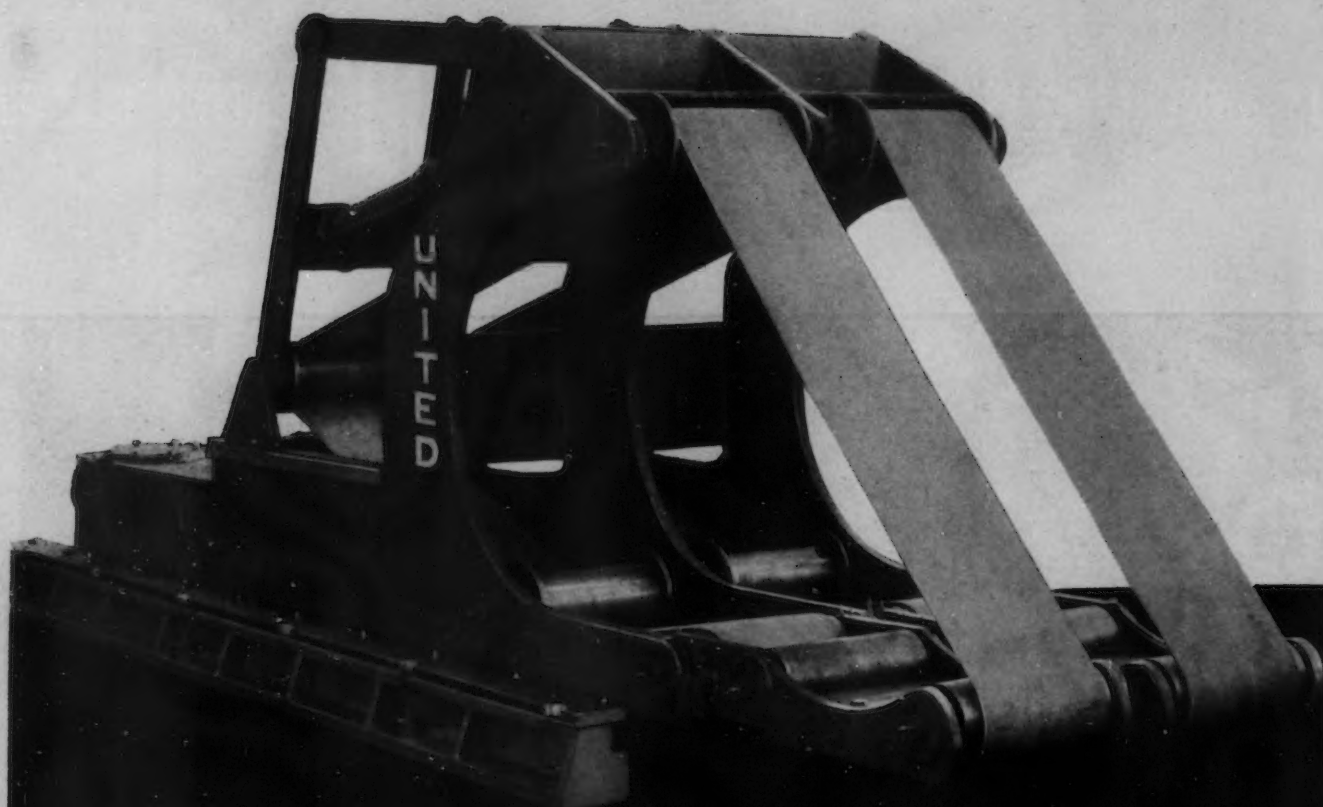
Exact control of uniformity of the product, bright surfaces of the metal for further fabrication without ad-

ditional preparation, economy of fuel—these advantages are certain with this equipment. Learn all you can about the high efficiency of SC gas-fired *radiant heating element* for modern heat treating in continuous and batch furnaces. It is a revolutionary development of vast importance to industry.

SURFACE COMBUSTION CORPORATION, Toledo, Ohio

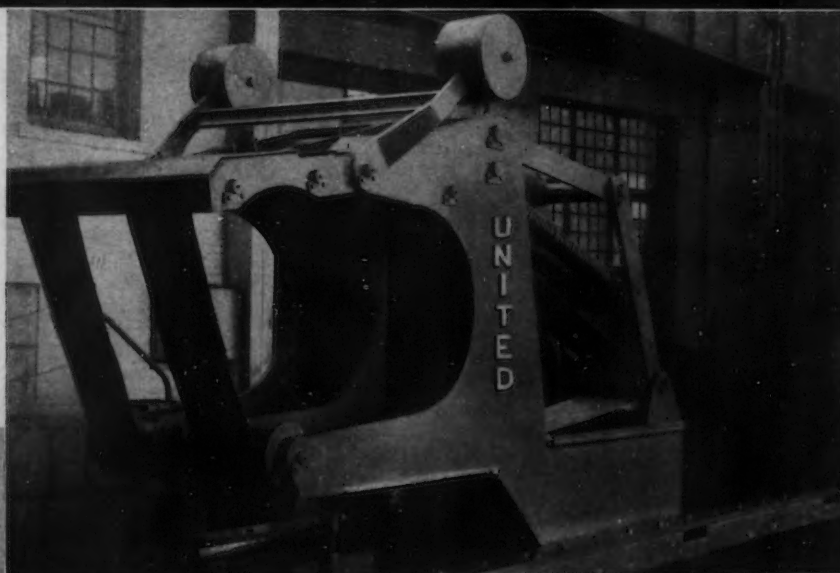
SURFACE COMBUSTION

Builders of ATMOSPHERE FURNACES and HARDENING, DRAWING, NORMALIZING, ANNEALING FURNACES for CONTINUOUS or BATCH OPERATION



BELT WRAPPERS

United Belt Wrappers are now operating successfully on 16", 20", 26" and 30" diameter tension reels for cold reduced strip products of tin plate and heavier gauges with resultant increases in tonnage up to 18%.



UNITED

ENGINEERING and FOUNDRY COMPANY
PITTSBURGH — PENNSYLVANIA

Associated Companies

DAVY and UNITED ENGINEERING CO., LTD.
SHEFFIELD · ENGLAND

DOMINION ENGINEERING WORKS, LTD.
MONTREAL · P. Q.

At

WORTH



If there is one thing that is emphasized in this plant—it is Quality, both of products and of service.

For this reason you are sure that the WORTH Plate you buy is of the highest standard consistently . . . that the Service you get is the fastest possible—your treatment the fairest, most courteous and helpful that sincere intent can make it.

We invite you to test for yourself. We welcome your inquiry or order.

**—every employee is
interested in seeing
that you get Quality
plus Service on all**

**SHEARED STEEL
PLATE**

**FLANGED and
DISHED HEADS**

**BLUE ANNEALED
SHEETS**

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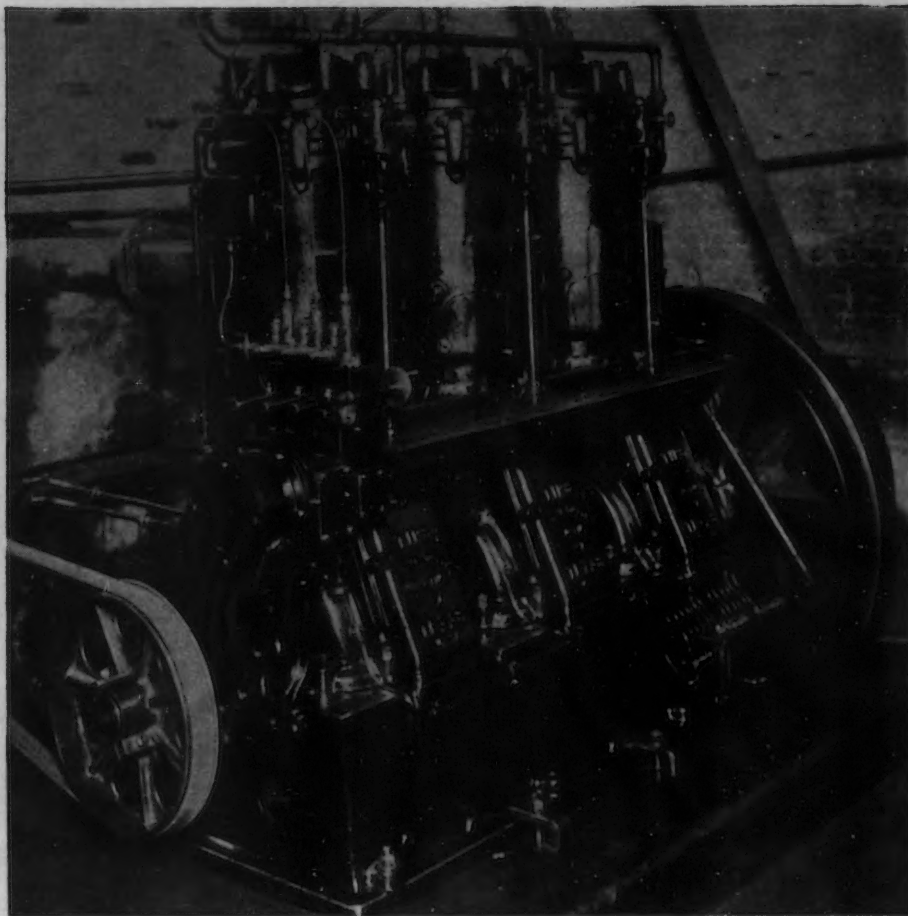
HOUSTON, TEXAS
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LOS ANGELES, CALIF.
Ducommun Metals &
Supply Co.

WORTH STEEL COMPANY · CLAYMONT, DEL.

LIGHTER
yet
STRONGER



*Three-cylinder, vertical Tips Oil Engine built by Tips Engine Works, Austin, Texas.
The crankshaft is Chromium-Vanadium Steel.*

THIS CRANKSHAFT OF CHROMIUM-VANADIUM STEEL

A versatile power plant is the Tips Oil Engine—versatile, compact and dependable. In the oil fields... in mining operations... in refrigeration plants... in power plants—in a wide variety of industries and applications, Tips Oil Engines are standing up under tough service.

Contributing to the dependability and compactness of the Tips Engine is the Chromium-Vanadium Steel crankshaft. Owing to the higher strength and greater toughness of Chromium-Vanadium Steel, designers of the Tips Engine were able to reduce the section and weight of the crankshaft,

providing a more compact unit without sacrifice of dependability.

Perhaps you, too, can improve the dependability and reduce the weight of your product with a Vanadium Steel. Metallurgists of the Vanadium Corporation of America will be glad to study the problem with you.

VANADIUM CORPORATION OF AMERICA
420 LEXINGTON AVENUE, NEW YORK, N. Y.

Plants at Bridgeville, Pa., and Niagara Falls, N. Y.
Research and Development Laboratories, Bridgeville, Pa.

Vanadium
Steels



FERRO ALLOYS
of vanadium, silicon, chromium,
and titanium, produced by the
Vanadium Corporation of America,
are used by steel makers in the
production of high-quality steels.

FOR STRENGTH • TOUGHNESS • DURABILITY

OXWELD* SHAPE-CUTTING MACHINES

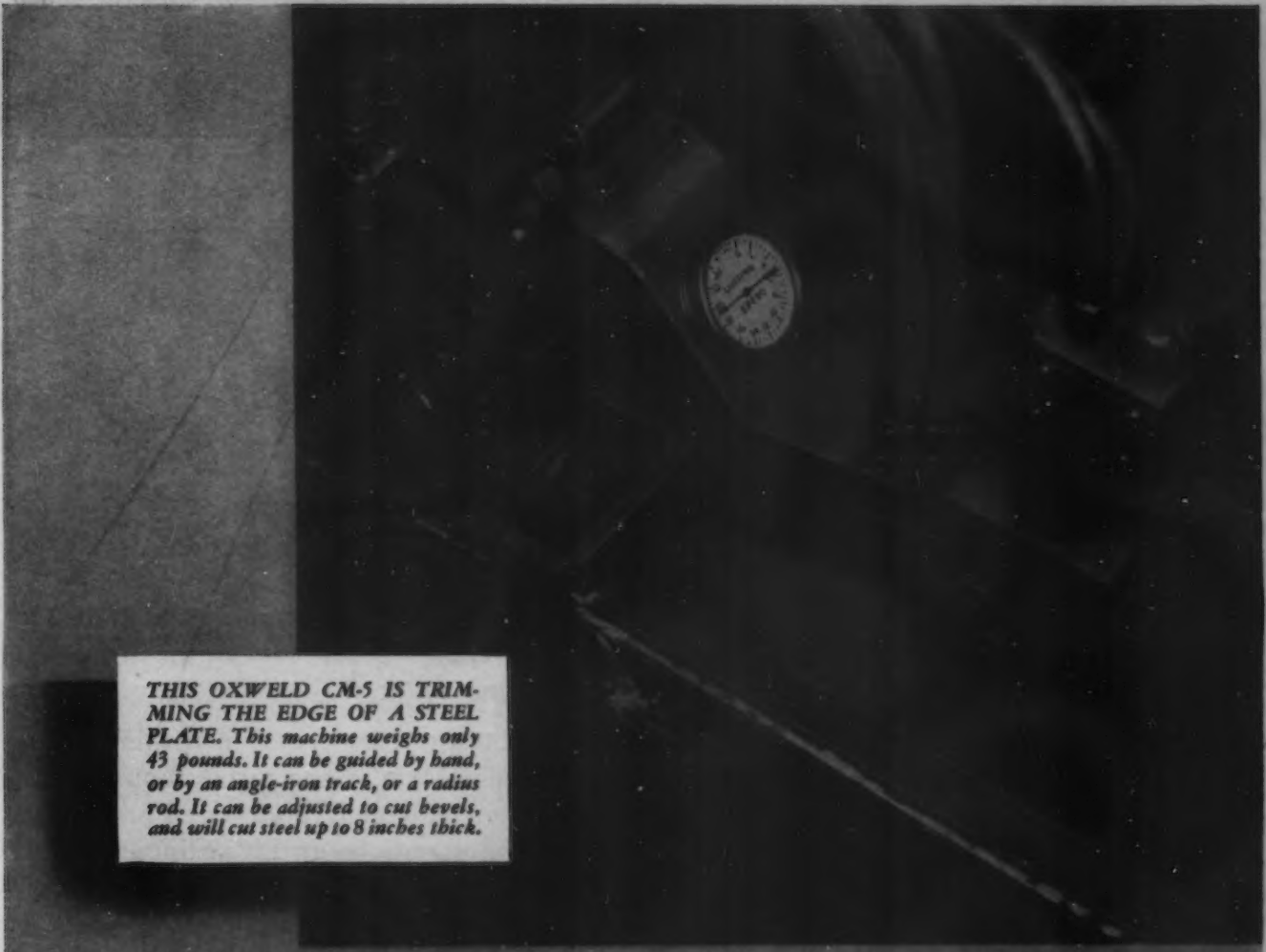
are steel-fabricating tools

YOU can obtain accurately shaped parts and at the same time save money in the fabrication of steel with a portable or stationary Oxweld oxy-acetylene cutting machine. The portable Oxweld CM-5, for instance, can be depended upon to make precision cuts profitably wherever the occasion demands. Because of its portability and the ease of obtaining good results, the CM-5 has proved especially useful in fabricating plants, boiler shops, forge shops and steel mills.

Visit the Linde Exhibit,
Booth H52,
National Metal Show
Atlantic City, N. J.,
October 18-22, 1937

A Linde representative will gladly help you determine which Oxweld machine is best suited to your particular work. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and principal cities.

*Trade-Mark



THIS OXWELD CM-5 IS TRIMMING THE EDGE OF A STEEL PLATE. This machine weighs only 43 pounds. It can be guided by hand, or by an angle-iron track, or a radius rod. It can be adjusted to cut bevels, and will cut steel up to 8 inches thick.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES

FROM



LINDE

UNION CARBIDE



The METAL WORKING INDUSTRY On Display

Each year the metal-working industry goes on display at the National Metal Exposition. The latest developments in materials, processes and equipment will be exhibited and in many cases demonstrated by the manufacturers who serve this industry.

The metal-working industry also goes on display in The Iron Age National Metal Issue to be published October 14 in connection with the Exposition. A prominent feature of this issue will be an India tint insert having the following sections:

**The National Metal
Congress and Exposition
Atlantic City
Auditorium
October 18-22, 1937**

Under the auspices of:
American Society for Metals

Also co-operating:
**American Welding Society
Iron & Steel Division, A.I.M.E.
Institute of Metals Division, A.I.M.E.
Iron & Steel Division, A.S.M.E.
Machine Shop Practice Division, A.S.M.E.
Wire Association**

THE IRON AGE



Photo through courtesy of American Society of Metals

- ★ *Metal Treating, Furnaces and Refractories*
- ★ *Welding and Cutting*
- ★ *Metals*
- ★ *Metal Cleaning and Finishing*
- ★ *Metal Working Machinery and Tools*
- ★ *Testing and Inspection*

Each section will be introduced with an attractive pictorial spread followed by original, authoritative editorial articles dealing with these subjects.

Advertising will be placed right in the sections either following the editorial articles at regular space rates, or facing one of the editorial pages at slight additional cost.

Here is an issue which will be read and studied by executives in metal-working plants. It is an issue which comes to their attention twice—at their offices and again at the show where copies will be distributed. It will bring your product to their attention at a time when they are thinking about buying. It provides an unusual publicity opportunity.

Pick the section in which you want your advertisement placed and send in your space reservation, or write for further details.

National Metal Insert
October 14, 1937



When is a Customer Satisfied?

Satisfied customers are the foundation of any business. Meeting a specification or a delivery date helps, but these are only a start.

Here at Industrial Brownhoist, we believe that a customer should be satisfied only after years of dependable and profitable operation from the crane we sell him. This involves many things—design, construction and even our selling methods—for it means that our locomotive or crawler crane must prove itself the most economical unit for doing

your particular kinds of handling work.

This slow, but sure, method of building customer good-will is responsible, in our case, for the world's most complete line of locomotive cranes. It is responsible, too, for the unusually high regard in which the name Industrial Brownhoist is held wherever materials are handled.

Are you satisfied with your present material handling costs? If not, we would like you to be one of our kind of customers.

INDUSTRIAL BROWNHOIST CORPORATION, BAY CITY, MICHIGAN

District Offices: New York, Philadelphia, Cleveland, Chicago

Locomotive Cranes
Crawler Cranes
Erection Cranes
Winching Cranes

INDUSTRIAL BROWNHOIST

Bridge Cranes
Pile Drivers
Dock Machinery
Bucklers

MIDVALE

HARDENED AND GROUND ROLLS—
PROTECT BOTH THE QUALITY OF YOUR
OUTPUT AND ITS COST



ROLL failures due to metallurgical defects do several things. They delay deliveries—which does not improve customer relations. They lower the quality of output—which may mean costly rerolling. They tie up the whole shop—which also is expensive.

Midvale has had experience with hardened and ground rolls equaled by few firms in the whole world. We have made them for rolling practically every type of metal, and know from experience the requirements of each. Perhaps that is the reason we have had more roll orders this season than ever before in our history.

THE MIDVALE COMPANY • NICETOWN • PHILADELPHIA

OFFICES: New York • Chicago • Pittsburgh • Washington • Cleveland • San Francisco

MIDVALE



Let's make medicine



the council fire is lit . . .

INTERESTING HOWS

- HOW the Industrial Advertising Manager Can Function in His Public Relation Program.
- HOW to Evaluate Publications—Methods of Qualitative and Quantitative Analysis
- HOW to Use and Not to Use Industrial Motion Pictures
- HOW to Develop and Maintain Industrial Mailing Lists
- HOW to Secure Greater Effectiveness from the Advertising Dollar
- HOW to Organize and Carry on Market Research Activities and How to Apply the Facts
- HOW to Apply Showmanship and Add Sales Power to Industrial Copy
- HOW to Write Better Letters and Use Them More Effectively

Prepared by The Buchen Company, Chicago

HOW! BROTHER

By smoke writing and carrier pigeon—by swift runner and heliograph, word has reached the council fire that the braves of many tribes are on the march and will assemble in full force at the big 15th Annual Pow-wow of the NIAA, September 22, 23, 24, at Chicago.

Important plans will be discussed—extensive exhibits of successful advertising and sales promotional material displayed and valuable “Hows” presented by industrial sales and advertising directors.

Of course, pleasure has had its full consideration—banquets, night clubs, bathing, golf—and bows and arrows for those who prefer.

Mr. H. D. Payne, Chairman, 2145 Walnut Street, Chicago, Ill., will gladly accept your reservation or send further information—write him.

NIAA

**15TH ANNUAL ADVERTISING
AND SALES PROMOTION
CONFERENCE AND EXPOSITION**
EDGEWATER BEACH HOTEL, CHICAGO
SEPTEMBER 22, 23, 24, 1937



Inland Galvanized Sheets Are Setting New Standards

New standards for service life and uniform workability are resulting from Inland's improved methods of producing galvanized sheets. First, the most modern methods and equipment are used in producing the base metal sheets; second, Inland's new equipment and improved method of galvanizing assures a secure bond between steel sheet and coating.

Examine an Inland galvanized sheet. You will find no streaking. Temperature is held uniform during the galvanizing process. While this uniformity of appearance is only a surface feature, it is indicative of the closer bond and longer life of the coating.

You'll find it a safer rule to specify "Inland" wherever galvanized sheet metal is to be used.



• STRIP • TIN PLATE • BARS • RAILS • REINFORCING BARS • PLATES • FLOOR PLATES • STRUCTURALS • PILING • ETC.

INLAND STEEL CO.


Local Offices: 38 South Dearborn Street, Chicago, Illinois • Office in Detroit, Michigan • Branches in New York, St. Louis, St. Paul, and other cities.

BASIC BEGINNING OF A MULTITUDE OF PRODUCTS



BARNES-MADE COLD ROLLED SPRING STEEL



A warehouse continually filled with 2,000,000 pounds of rods or finished stock. A mill turning out large stocks daily in many widths and thicknesses... a product of uniform quality and microstructure... these are your assurances of a dependable, quick source of supply for cold rolled spring steel.  Whether your order calls for a small lot... or a continuous supply over long periods, you'll find ready co-operation and prompt attention here.

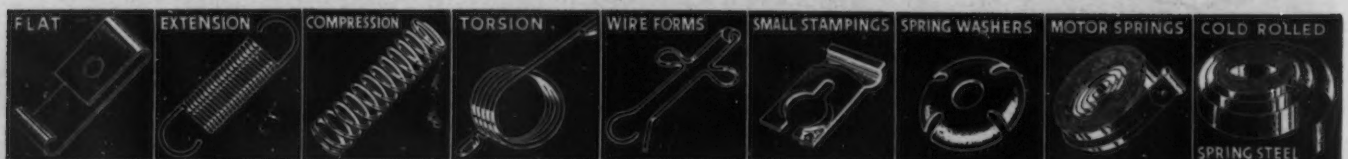
Next time send your inquiries for spring steel to
STEEL SALES DEPARTMENT

The Wallace Barnes Company
DIVISION OF ASSOCIATED SPRING CORPORATION
BRISTOL, CONNECTICUT

... MANUFACTURERS OF
THESE ARTICLES NOW USE
BARNES-MADE STEEL ...

SHOE SHANKS
PISTON RING EXPANDERS
MANICURE FILES
METAL CUTTING BAND SAWS
RAZOR BLADES
GOLF SHAFTS
FISHING RODS
BUTCHER SAWS
STEEL TAPE RULES
FLAT SPRING PARTS
AND MANY OTHERS

SPRING Steel



SPRINGMAKERS FOR MORE THAN THREE QUARTERS OF A CENTURY

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THE IRON AGE

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Immediate STEEL

EVERY KIND • FOR EVERY PURPOSE • IN STOCK • READY TO USE



For quick, convenient, economical service on all steel and allied lines, phone, wire, or write your Ryerson steel-service plant. We are organized to make quick delivery on all orders, large or small. The material is in stock. Special order and dispatch systems, experienced organization with modern equipment and every shipping facility is your assurance against delay. The Ryerson Stock List shows the complete range of products carried for immediate shipment. If you do not have the current issue, we will be glad to send it. Joseph T. Ryerson & Son, Inc. Plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

RYERSON

BARS • STRUCTURALS • SHAFTING
 PLATES • ALLOY STEEL • STAINLESS
 TOOL STEEL • IRON & STEEL SHEETS
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THE IRON AGE

ESTABLISHED 1855

September 2, 1937

Vol. 140, No.10

Interruptions

EVERY day one can learn something new if he keeps his ears and eyes open. I learned something new last week about typewriting. After listening to the click—click of typewriters for more than a quarter century and, indeed, occasionally pecking away myself at one with two fingers, as in composing this editorial, I found that there is such a thing as rhythm in typewriting and that it is an indication of efficiency.

Probably that is something that most of you have known for a long time, but it was new to me. And the revelation came in this fashion.

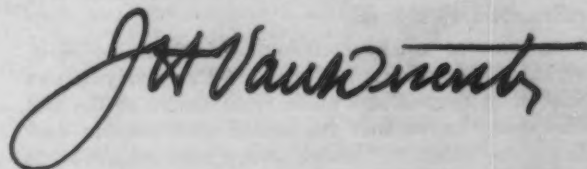
Like most publications which deal in news, we have a telegraph-typewriter in our office which is kept pretty busy on closing days receiving messages from all parts of the country. An operator in the telegraph office in Youngstown, Chicago, or some other place sits down at the sending typewriter with the message for us, gets the connection and begins to typewrite it. As she does so, our receiving typewriter, synchronized with the sending instrument, automatically duplicates every letter. Not the hundred-thousandth part of a second between them, although a thousand miles apart.

Sometimes these messages are short and sometimes very long. It was in listening unconsciously to one of the long ones click, click away that I discovered the rhythm. The operator was actually playing a tune . . . click—click—click—click—~~click~~—click—click. The same rhythm that the old timers among us may remember in "Ta-ra-ra-ra—boom—de—ay."

Inquiry as to what it was all about revealed the information that rhythm, which consists of regularly alternating changes of pace, is a part of the accepted efficiency technique employed by expert typists. It is especially effective on extensive copying jobs which might be said to be "mass production" in this particular field of effort.

Frederick W. Taylor, father of "scientific management," revealed the efficiency value, long ago, of interruptions, or alternations of rest and work periods. But alternating changes in pace on industrial mass production operations is something quite different. It may have possibilities outside of typewriting.

Perhaps we will find that elliptical gears are better on our assembly lines than are circular ones!



Opening and Shutting the Zipper Case

HOW would the proposed National Board for the Control and Forecasting of Inventions, proposed by the President's Committee on National Resources handle the case of the zipper, assuming that it had not yet been invented?

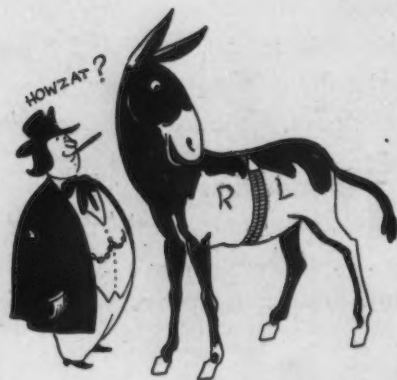
We asked that question in an editorial in *The Iron Age* of Aug. 5, for the purpose of getting down to a practical case and of drawing the opinions of practical men. It does seem somewhat unfair to put all the burden of thought upon the professors.

As a patriotic contribution to the President's Committee, we donate this study to the cause without cost to the Government. As to its practical value, in comparison with the million dollar report of the original Committee—well, we will have to leave that to the judgment of our readers.

With this introduction, we will proceed to business.

The Editor

**Zipper
Would
Close the
Democratic
Split**



CONSIDERING the zipper. I represent the C.I.O. (Committee of Inconsistent Oracles) and I DEMAND the addition of six additional members of this board, who will see things my way. The addition of this "new blood" would assure the maintenance of the privacy of one's constitution. It would promote the cause of Social Security.

Consider the plight of the cotton grower! If this new invention were ever to be proposed, it would be a boon, as each and every zipper must have a selvage, made of cotton, which would be used to attach the proposed invention to any article sold in interstate commerce.

Such an invention would of necessity be beneficial to the oil industry, to provide the necessary lubrication to zippers.

In answer to Prof. Howzis. I think he loses sight of the major "objective." Everybody knows that most buttons are made from oyster shells, and everybody knows that the month of November contains the letter "r," hence, every man employed in the business of supplying the raw materials for the

manufacture of buttons leaves his home early in the morning of the first Tuesday following the first Monday in November, and does not return from his oyster digging until long after the polls are closed. So, phooey on the oyster diggers!

On the other hand, the miners (not necessarily United) are on hand to vote, and they would provide the metal to make this proposed zipper. Additional work would be provided for countless metallurgists—and just think of the possibility for producing as a by-product 45c. silver, which the United States Treasury could purchase for 77c. an ounce. This would eventually lead to more employment in the "white collar class," necessitating more bookkeepers, more tax collectors, more diplomats to enter into negotiations with other silver producing countries, whereby we could exchange our \$35 gold for still more silver.

Consider the professional man—the doctor. In the event of absent-mindedness on the part of the zipper user, resulting in an accident, there would be brought into play the services of the doctor, the hospital, the manufacturer of pharmaceuticals, the bandage maker, which reverts back to the cotton grower. Ambulances would be required to transport the victim to the hospital which would, in turn, stimulate the automobile industry, which would promote more sit-down strikes—and, if such an invention were ever produced, in the case of sit-down strikes, there would be no division in the line.

Admittedly, nobody but a baby would ever swallow a button, hence the above cited possibilities would stimulate more industries than the button industry ever could.

The Post Office Department could equip all its mail sacks with zippers, thereby promoting greater efficiency, and allowing Mr. Farley to show even greater surpluses in his department than he has in

the past. In such case, the zipper would be "in the bag."

In conclusion, the greatest possible use to which an invention of the zipper under consideration could be put would be to close the split in the Democratic party, and if it were to perform this one function, the board would do well to permit it.

B. H. A.
Mansfield, Mass.

Urges Appointment of Sally Rand



IN reply to the hypothetical "zipper" case before the proposed National Board for the Forecasting and Control of Inventions:

Chairman Whoozis: "Mr. President, herein is the report of the National Board for the Forecasting and Control of Inventions on the particularly knotty problem having to do with the possible supplanting of buttons throughout our grand and glorious Nation.

"A rumor has come to the attention of our august body that in a secluded mountain laboratory an inventor, presumably financed by a large industrial corporation owned by a family with a six-letter name beginning with 'D' and ending with 'T,' has perfected a cunning device prosaically called the 'zipper.' As near as we have been able to determine with the limited funds at our command this simple device will completely supplant buttons and other fastenings to a degree which will completely revolutionize the civilization with which we are familiar.

"In taking evidence on this matter, we have had the helpful advice of Professor Whyzis, who has analyzed the increased leisure our people will have as a result of this invention. Professor Howzis has shown the dire implications of technological man hour displacement which will exist if this device is universally accepted. In addition, Mr. Lewzis, who represents the common people to a degree second only to that of yourself, has advised us of the effect this invention will have on the voting public.

"You will appreciate, Your Excellency, that this matter is too far reaching and is of too grave an import for our body to present a decision after studying this vital matter for only the short space of six months. Accordingly, we respectfully request that you ask for an initial appropriation of approximately \$250,000 and appoint an impartial committee to consider this matter from every angle so we may fearlessly render a decision which will be to the best interests of the Almighty, Your Excellency, the

world as a whole, our country and the Democratic party.

"Herewith, may it please Your Excellency, is a suggested list of members of the committee together with a short comment on the reason for membership:

"Professor Whyzis, who has made an exhaustive study of the subject at great personal sacrifice and who should, in some small way, be reimbursed.

"Professor Howzis, who is in touch with the matter and is not serving on any of your other committees anyhow.

"Mr. Lewzis, who would conscientiously keep the committee informed concerning public feeling towards the new invention.

"A representative of the Department of State as it is claimed this 'zipper' could be used to fasten knee breeches worn at foreign court functions.

"A representative of the Army Board as the 'zipper' has been proposed as a fastener for blankets for artillery mules.

"A representative of the National Board of Christian Missions who could tell us whether the heathen would prefer their simple garments without buttons or without 'zippers.'

"Miss Sally Rand, whom we feel, is wholly impartial as to buttons or 'zippers' and who would be most soothing to the committee as a whole in moments of heated debate!"

G. J. B.
Detroit, Mich.

Must Have Census of Closures



IN view of the magnitude of social and economic problems involved, it is recommended:

That a bill be introduced in Congress to provide a board to be known as the FEGCA (Federal Emergency Garment Closure Administration).

That such board consist of two chairmen and 48 members, the members to act as sub-administrators in each state. That an appropriation of \$48,000,000 be requested for suitable administrative quarters in each state, for conducting investigations, keeping records, holding hearings, and examining reports.

That sub-administrators be empowered to appoint such *qualified* assistants, clerks, investigators, etc., as may be found advisable.

That funds be made available to investigate manufacturers, jobbers, dealers and consumers of garments requiring closures. That forms be prepared for distribution to manufacturers, jobbers, dealers and consumers for reporting garments manufac-

tured, on inventory and sold; also individual returns for garments in use, lost, found, discarded, etc.

That forms be provided with space for filing tax returns. That the bill fix a rate of taxation based on lineal inches of closure of each garment reported.

That for the purpose of efficient administration one of the committee chairmen be placed under the jurisdiction of the Department of the Interior, and to handle all matters concerning buttons; the other chairman under the Department of Labor, to handle matters concerning zippers; and the committee as a whole under the Department of Commerce.

That the bill provide, that within thirty days after enactment, every garment or article of apparel made, worn, or sold within the continental boundaries of the United States of America shall have all closures duly registered, inspected and reported for tax purposes; and furthermore, that all such closures be provided with *both* buttons and zippers, and that the burden of proof in all disputed cases shall be placed on the consumer.

W. M. G.
Sandusky, Ohio.



THE argument of Mr. Privilege to the National Board for Forecasting and Control of Inventions in favor of substituting the zipper for buttons:

"Since all legislation and Government effort which does not emphasize class distinction is decidedly unpopular with the people in power at present, I suggest we consider the zipper in its effect on the lives of a class of neglected forgotten men.

"The forgotten men in this instance are the bachelors who due to the troubles of the depression have not been in a financial or mental condition to better their state of single blessedness.

"Consider the time and mental effort spent by the 15,000,000 bachelors in these United States of ours in attempting to sew buttons on their garments, the anguish of the punctured finger and the mental strain of attempting a task alien to their sex.

"If the zipper (a clever device substituted for buttons) were to be O. K'd by this board the time spent by bachelors in sewing buttons could be diverted to financial pursuits and, in view of their better mental and financial condition, they would naturally try to correct their state of bachelorhood.

"Even if this were only 75 per cent successful, it would eliminate all the 11,000,000 spinsters available and release at least 7,000,000 jobs thus taking care of the unemployment question.

"Furthermore, think of the billions of buttons re-

leased for circulation which can be used for money in the next depression.

"Gentlemen, in view of the foregoing facts and statistics I do not see that we have any choice but to approve the zipper as a substitute for buttons."

D. T. D.
South Hadley, Mass.

Sees Big Bootleg Trade



THE HON. PAUL ETTIC: We have the opinions of three representative gentlemen, each with an open and shut proposition seemingly impossible to reconcile with each other; yet if we would fish for votes we must avoid offending any section of the electorate.

I believe it is possible to compromise the proposals of Prof. Whyzis and Prof. Howzis in such a way that we can poll the maximum votes from the adherents of both of these theories. I suggest that zipper manufacture be permitted for applications which do not infringe on the present buttonmakers' market.

By injecting this prohibition clause into the permit we may develop an enormous bootleg trade in zippers through that age-old human weakness which sacrificed paradise to break the first prohibition law.

True, the buttonmakers will eventually feel the pinch of this bootleg production, but then an extensive zipper prohibition enforcement staff will be required to enforce the law and we could arrange that buttonmakers only could pass the Civil Service examinations for these posts. Further, this scheme will add considerably to the duties of all law enforcing agencies; without laws there can be no law-breakers, we must keep the very expensive equipment provided for the entertainment of the guests of the state in operation, as this helps to some extent to relieve the unemployment situation.

Mr. Lewzis: I shall agree to this arrangement only on one condition; that suitable laws be enacted to compel the garmentmakers to provide a *full crew* of buttons with each garment made.

The board accordingly agreed first to recommend that laws assuring *full complement* of buttons be passed during the present session, and that contingent on the passing of these laws a *limited license* to manufacture zippers should be issued.

Also that a study be commenced at once to prepare examination papers for applicants for position on the *zipper prohibition force*.

A. B. C.
Wilmington, Del.

The Ladies Discuss the Zipper Case



THE board took a prompt vote upon the proposal to outlaw button substitutes and decided, one dissenting, to promulgate the ruling. The meeting then adjourned for luncheon engagements.

It happened that Prof. Whyzis was speaking informally before his wife's luncheon club on The Influence of Women on Invention. His wife is one of those coed graduates of Hillinois College who combines intellect and womanly virtue to the despair of all men, sharing her husband's inmost thoughts and business, while turning the old earth with gentle hand in its revolution and evolution. So during the soup course she drew forth the sad story of the fixity of the button industry as established by fiat of Howzis, and Lewzis and others.

By the pineapple salad course she had gently upbraided her husband for underestimating the time per button (the lady time setter three seats removed requires 1 sec. per) and then counted his shirt, suspender, flap and underwear buttons and the number of times they are operated, raising his estimate of 10 to 40, as an irreducible minimum.

Before the second large cup of coffee was finished, a delegate to the 'Women Voters' Association had been appointed to urge the appointment of a woman upon the board. Two designers had planned a darling little bathing suit with startling, quick-acting button substitutes in nothing flat and an office wife's "uniform" superspeed bus-catcher dress (permitting a roll with the breakfast cup of coffee). Mrs. Lewsis had drawn up a small organization of W.M.W.'s (Working Men's Wives), with cute little Japanese lacquered iron pipe batons (Made in U.S.A.) and steel hatpins (they are so quaint), for urging husbands to take appropriate action toward reducing the labor of women. The wives of steel workers and metal workers were pleased, the others, after some slight protest which was lost in the general din, agreed to cooperate in the cause. The Ladies' Publicity Organization had placed upon its agenda a campaign to urge and demand the Buttonless Era upon all and sundry. A few other bits of business were taken up, but your reporter missed them in the introduction of the speaker.

In fact, the transaction of business was so active, as the ladies proceeded to demonstrate the influence of women on inventions in ways entirely overlooked by the professor, that they could not recall afterwards whether his Adam's apple oscillated vertically or horizontally, much less any of his remarks.

Nevertheless, they applauded him to the echo, for had he not given them a new and uplifting idea?

At the next board meeting, Prof. Whyzis proposed reconsidering the button substitute proposal, very forcefully and reasonably urging his New and Revised Estimates of Lost Time, amounting to 926,000,000 man-hours. But Prof. Howzis objected owing to the lobby of Independent Button Makers, while Lewzis objected owing to the demands of COY voters. What succeeded was not so reasonable, but quite passionate.

Prof. Whyzis: "In that connection, gentlemen, my wife—"

Rest: "O-o-oh!"

Whyzis: "—has organized the voters, the lobby, and labor to demand button substitutes—or else! Do I make myself clear?"

Rest: "I move the proposal be tabled!"

Lewzis: "Gentlemen, as a matter of principle, I propose that we petition Congress to offer a reward for the development of a button substitute. Next to the noble laboring class, the inventors are the backbone and hope of our great Nation. (To himself: Enough government subsidies, a union of inventors with a percentage of such subsidies in lieu of other dues—). Besides, and this is off the record, the Chicago police are gentle as lambs compared with my loving wife when we mildly discuss my missing buttons and she has her baton or hatpin handy."

All: "Sold."

Whyzis: "Let it be resolved that we memorialize Congress, to offer a substantial reward to the inventor of a button substitute, and let us furnish it with all pertinent data relative to our serious deliberations, not forgetting the attitude of the Better Half of the constituents."

Howzis: "Seconded!"

Lewzis: "It is a vote!"

Down With Zippers!



THE National Board for the Forecasting and Control of Inventions being dedicated to the proposition that industrial production should be state controlled and state stabilized must accept the logical conclusion that the inventor is an intruder, a traitor and a menace to the national economy.

The board would therefore submit its recommendation that the invention of the zipper be prohibited.

After a few decisions the board would find that their efforts had completely vanquished the spirit of invention and like Alexander of Macedon would

anxiously survey the horizon for other worlds to conquer.

New spheres of activity would readily appear within its orbit and the board would be found appraising the possibilities residing in restraint of inventions already in use. Professor Howzis, from his archaeological and anthropological studies, would picture for the enlightenment of the board a Utopia, not of the future, but of the past—that vast planners' paradise which was Egypt in the pyramid age. There, where the wedge and the lever were the highest mechanical powers known, stabilization was so effective that unemployment was unheard of. Unspotted by the black plague of invention, man could serenely contemplate the prospect of a lifetime of unremitting labor.

Canada's approach to the question has been somewhat different. We have borrowed from the sporting fraternity the handicap principle. Throughout the land handsome edifices have been erected on sites which were excavated by hand labor. Contractors have been bonused to leave their steam shovels in their yards and the taxpayers of the Dominion are now basking in the resultant sunny prosperity. This, the doctrine of inadequacy, would repay close study by the board. An introduction to the technique is contained in the libretto of the "Mikado" where the pool shark is condemned to play with "a twisted cue and elliptical billiard balls."

No! the board cannot consider the zipper matter an open proposition and must shut the gates of invention to mankind.

J. W. T.
Winnipeg, Canada.

"To Be
or Not
to Be"



"ALL buttoned up" . . .

F.C.I. Chairman Whoozis and fellow F.C.I.-ers lugged their 879 -page report on buttons-to-be-or-not-to-be into a press conference last Friday. The gathered newshawks shuddered and then shouted questions. Discussions grew as hot as the day, and everybody sweated. F.C.I.'s Whoozis fanned and mopped but refused to make a condensed statement of results for the press.

The U. S. press reacted peculiarly and differently. The tabloids stuck to pictures of board members. The *Times* sent the entire report to the composing room and added an extra section on Sunday's run. The news services hurriedly condensed with relay teams, each consisting of lawyers, interpreters, summarizers and stenographers. From this the party press gleaned the fact that "F.C.I.'s successful start was evidence of another presidential masterpiece."

Party editorials indicated that, having cleared up current problems and blunders of his predecessors as well as some errors made by the nation's fathers, the President was well on the way toward clearing away all future possibilities of problems.

The labor sheets from coast to coast stopped Labor Day solicitations long enough to run victory streamers. Labor hero Lewzis was highly complimented for his influence upon the board decision, which labor "knows" is the death blow to cessation of progress and progress at labor's expense.

The opposition press with few exceptions continued their great interest in the American League pennant race. The exceptions printed eyebrow raising headlines about the probable cost of the F.C.I. recommendations. The mass noted the possibility in the financial sections of new stock issues and new governmental bond printings as a direct result. Editorially they either argued the pros and cons of huckleberries and blueberries or gave pointless dissections on the history of American inventions.

In reality, the F.C.I. report, according to keen minded analysts, is a compromise. Prof. Whyzis, New Deal leisure time expert, favored the displacement of buttons to save 57,500,000 man hours per year. Planned economy sponsor Howzis foresaw the increase of unemployment if button displacement was allowed. Labor Leader Lewzis pleaded for labor's continued activity in button manufacturing. Lesser opinions from economic study groups, executives of button fabricating, thread making, and scissor grinding factories, American Inventors Congress, Bureau of Fisheries subcommittee on clam digging and baking, and several others made up the balance of the testimony. From this, F.C.I. recommends:

1—That the button business be put under the "primitive crafts" division of W.P.A. with the first lady as administrator and a sum, to be recommended by the President, be appropriated by Congress to maintain employment among button makers;

2—That another sum, also to be recommended by the President, be appropriated by Congress to be awarded by the American Inventors Congress to the inventor who discovers and perfects a labor saving device to eliminate the necessity of buttons;

3—That private capital be given the perfected invention on a royalty basis to manufacture, but that the royalty terms include the stipulation that a labor council set up terms of employment such as working conditions, hours, wages, production quotas, and bonuses;

4—That W.P.A. officials immediately set the O.L.T. (occupation of leisure time) department to work figuring out ways and means of disposing of the 57,500,000 free man hours to be saved by the invention;

5—That a new bureau be established to maintain the relative positions of the button business and buttonless business and at the same time to see that labor, W.P.A., C.C.C., Bureau of Fisheries, and other related bureaus, agencies, and groups receive their due portions of the executive authority and responsibility.

The secretary to the President in a later press conference refused to comment on the F.C.I. report beyond saying, "The President has kept in close contact with the F.C.I. activities and approves of the recommendations made." Other sources of information, whispered close-ins, indicate that the President will bring an explanation of F.C.I. to the nation in a seaside talk as soon as he is ready to name the sum required to complete F.C.I.'s plan for giving the nation a button substitute.

F. K. G.
Grand Rapids, Mich.

More Research



Complying with your editorial request on page 29 of *THE IRON AGE*, Aug. 5, 1937, issue, I am submitting below a condensed resume of the closing device controversy. The reason for submitting this condensed version is that the full report (weighing over 12 pounds) would probably be too burdensome for you to deal with:

The board, after duly hearing presented evidence, decided to appoint a committee to investigate the entire status of the button industry with the resultant procedure:

A. The Committee duly organized and prepared its plans which resulted in a first request to the Board for an appropriation of \$50,000 which, in due course, was authorized and made available. At the end of six months, a further appropriation of \$100,000 was authorized and at the end of the year, the Button Industry Investigating Committee had established research offices in fourteen important centers of the country. To carry on its work for the second year, an appropriation of \$500,000 was requested and granted and Investigating Agencies and Field Staffs were established in one hundred localities in the United States and fourteen in different foreign countries. For the third year, its staff totaled 14,000 people;

clerks, investigators, attorneys, field men, foreign advisors, etc., with a payroll of several million dollars.

B. At the end of the third year, it submitted a formal report to the National Board, covering its researches into all the angles pertaining to a manufacturer of the finished products; the materials used; bone, synthetic molding compound, ivory, etc., etc., with all the ramifications incident to the effect of harm that might result to our foreign trade and foreign relations in the event we discontinued imports of certain raw materials used by the Button industry. It further developed in its report that its work had resulted in the employment of approximately 25 per cent more people in the industry, made necessary by the data acquired daily from each industry and the further statement that it believed further necessary regulations would generally increase personnel required. Its concluding recommendation was that rather than the Board issue a definite decision that it authorize the Committee and its National and International Staff to be made a permanent institution, pointing out that with its large personnel it was a political factor and that further, all of its members had become affiliated with the National Union for Investigations, who, in the event of any disbandment of its unit, would cast its political weight in its favor.

C. The Board formally accepted the report and to give its informal decision, it decided that in the event any closing device other than a button came before it for consideration, it was in strong position to refer the matter to this Button Committee Organization with its staff, who can then make an investigation and report to them, so that they would be able to render an intelligent decision. Incidentally, they highly commended the Committee on its extensive work and the large organization it had been able to create. * * *

* * * 1. As unofficial data, it might be of interest to state that this Button Committee appointed by the Board had been followed by the appointment of ten other Committees that had grown into International organizations, investigating other similar questions.

2. As further unofficial information, two of the members of the National Board had resigned their offices to take higher paid positions with these Investigating Committees.

Signed,

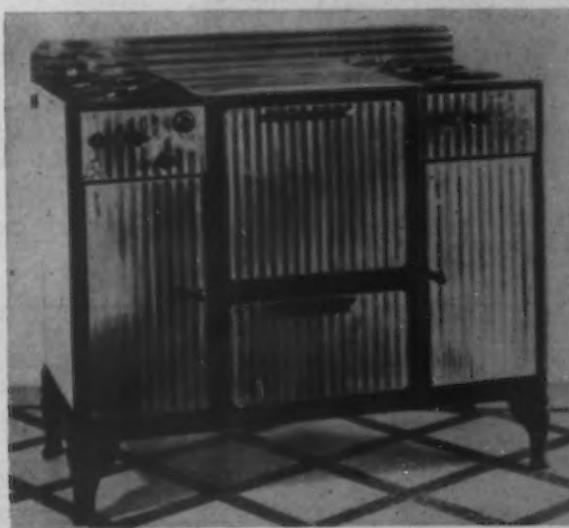
H. W. WOLFF,

Secretary to the Recording Sec., National Board for the Forecasting and Control of Inventions.

SOUTH AMERICAN manufacturers are turning to stainless steel and enameling iron to give retailers "new things under the sun."

This electric range is a product of Ennis & Williamson Co., of Buenos Aires, Argentina. The surface metal is Armco 18-8 stainless steel. The novel striped effect is achieved with polishing and buffing equipment in the manufacturer's plant. Panels of 23 gage stainless, No. 2B finish, are stamped to produce uniform ridges in the metal. The protruding parts are polished to a lustrous No. 7 finish, while the indentions retain their original dull finish. The simple operation provides a marked contrast.

All trim is in jet black enamel. A red plastic material is used for the switch buttons.



Safe Ending Locomotive Boiler



VERY little has been written during the last few years regarding the changes in methods of safe ending locomotive boiler flues and superheater tubes. A word of explanation may well be in order, therefore, for those not familiar with the problems that locomotive boiler makers and maintenance men have to face.

When a locomotive is in service the flues and tubes oxidize and pit rapidly, due to impurities in the water used, as well as certain other actions due to contraction and expansion of metals when unequally heated. This scoring and pitting action is most violent on the flues and tubes at their junction with the front and rear heads of the boiler, and it is necessary occasionally to remove the flues and tubes from the boiler and "safe end" them. In some districts this has to be done as often as every eight months, while in other sections, where the feed water is purer, the tubes will last from 18 months to three years without attention.

By cutting off the weakened ends and adding a new piece from 8 to 12 in. long on one end, the flues or tubes can again be re-assembled in the boiler and used

for another period, when it is again necessary to repeat the same operation. This is known as "safe ending" and applies both to flues and superheater tubes, the new piece added being known as a "safe end"

Former Practice

Until recent years it was the custom to heat the ends of the old and new pieces in a gas or oil furnace, swage down the end of the old flue, expand the end of the new piece to be added, then force the new end over the old flue in the manner of a scarf joint, and weld the pieces together by means of a pneumatic hammer. The rejected or imperfect welds sometimes ran as high as 30 per cent on flues welded by the furnace and forge process. Furthermore, the production was limited to a small number of flues per hour for two men.

In 1912 the Norfolk & Western Railroad installed an electric welder for this class of work, followed in a few years by the Nashville, Chattanooga & St. Louis Railroad, and a few others. Within the last dozen years more than half of the railroads of the United States and Canada have installed resistance welders in their maintenance departments. Some large roads, such as the New York Cen-

tral, and the Santa Fe have eight or 10 flue welders in their various shops. At first the railroad shops was urged to scarf the ends of the flues and safe ends in a lathe before attempting to make electric welds. Also, they were cautioned to machine the pieces very accurately, so as to obtain practically perfect contact before attempting to weld. But even this order has changed with the advent of better flue welders, and now it is found that it is not necessary to scarf the ends of the flues or safe ends; neither is it necessary to do any lathe or machine work, because of the better clamping devices, dies and more uniform distribution of the current to the work. The flues may be either sawed or cut by an ordinary disk cutter or pipe mill. The latest type of flue welder burns off about $\frac{1}{4}$ in. from the end of each piece of the work, so that inequalities of surface are in this way eliminated. But it is very essential to have a properly designed, modern welder. Early flue welders were of the butt type only and required nearly a perfect fit between the faces of the work.

Present Practice

Present practice in most railroad shops is about as follows: The old flues and tubes taken from the locomotives are tumbled or rattled for a number of hours inside a revolving drum, containing hot water, steam and sometimes certain chemicals, to remove the rust and scale which has accumulated. The damaged ends are then cut off in a pipe mill or pipe cutter, and thus made ready for new safe ends. If, however, the rattler has not completely removed the scale or rust from the ends, or if the ends have rusted while in storage, it is well to have a sand-paper belt machine at hand so that the tube ends may be pressed against the

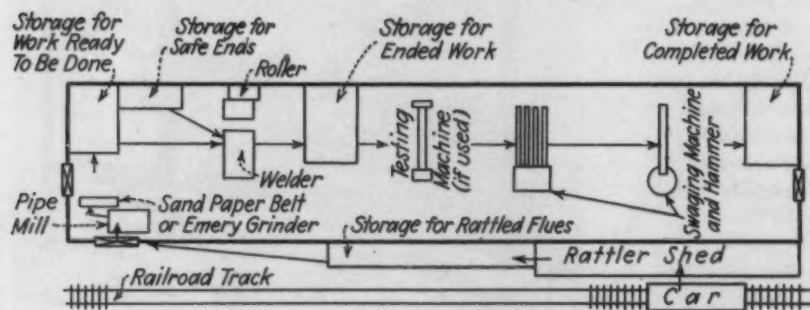


FIG. 1—Arrangement of a flue welding shop using an electric welder. Two welders may be used by making another line of work down the other half of the same room. The arrows indicate the travel of work to completion.

Tubes by Resistance Welding

belt for 3 or 4 sec. to clean the end which goes into the electrodes of the welder. The safe ends ordinarily do not require cleaning, but if rusty they also may be cleaned by the sand-paper belt machine. Clean work greatly lengthens the life of the welder dies.

The flue and safe end are then clamped in the welder by means of quick-acting air cylinders. The weld is made in the period of a few seconds by the flash process. The vicinity of the weld is then heated a little more and mechanical pressure is applied to make a slight upset, or swelling, in the vicinity of the weld so that it will go over the mandrel. The flue is immediately unclamped, shoved quickly over the mandrel, around which three rollers are revolving, which roll down the upset, leaving a smooth surface on both the inside and outside diameters.

Formerly the practice was to test each weld, either by means of steam or air pressure, at the same time striking the flue several hard blows with a hammer, and a brush and soapsuds were used to see if any bubbles appeared, indicating leaks. A leak was found so rarely, however, that many shops no longer test the flues in any manner, but install them directly in the locomotives. Flues are sometimes safe ended by this method as many as 10 or 12 successive times.

It is the practice in some cases to weld together pieces of flues or tubing which would otherwise be scrapped, thus making them long enough for a locomotive. This is known as "reclaiming" or "salvaging."

The layout of a modern flue welding room is shown in Fig. 1. Figs. 2 and 3 show an obsolete method of preparing flues and safe ends for the welder, and Figs. 4 and 5 show the present practice of

° ° °
By H. A. WOOFER
Chief Engineer, Federal Machine
& Welder Co., Warren, Ohio
° ° °

preparation, both ends of the work being either sawed or cut in a pipe mill.

Flue Welders Much Improved

In the past few years flue welders have undergone considerable development. Federal welders, for example, have been made absolutely flash-proof, thus insuring long life to the windings and bearings; furthermore all moving surfaces slide on hardened and ground steel plates, thus assuring continuous alinement. The clamping device has been especially improved, to give long life through complete protection from slag, as well as a perfect distribution of current around the circumference of the work. Two sizes have been developed, namely, 60 to 100 kva. and 150 to 200 kva. Both can be supplied with either of four types of pressure device. These are:

1. Hand toggle which gives the operator perfect control of his work at all times.

2. Hydraulic pressure from an accumulator or pump.

3. An Oilgear or similar device.

4. Hand-operated oil jack.

The oil jack was used on all large early types of flue welders, and although it is still found in a few shops, it is not recommended. It is too slow in production and too laborious for the operator. When either the Oilgear or the accumulator type of hydraulic pressure device is used, the welder is equipped with a suitable pressure cylinder all ready to pipe to it. The smaller welder is practically always supplied with the hand-toggle type of pressure device, since no great amount of human energy is required to push up the work. But the larger welder should have a mechanical pressure device of some sort, since superheater tubes to be welded sometimes have an actual cross-section of about $4\frac{1}{2}$ sq. in., requiring about 10 tons pressure to push up the weld.

Cost Per Weld Lowered

Modern electric resistance flue welders afford increased production and lower cost. As compared with the oil furnace and forge process, production was almost doubled in one case in the welding of 2-in. diameter flues, with no de-

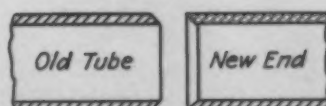


FIG. 2

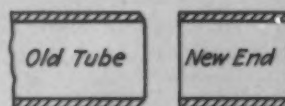


FIG. 3

OBsolete METHODS OF PREPARING WORK.

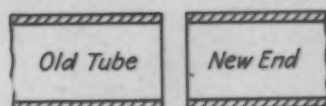


FIG. 4

ENDS SAWED OFF OR CUT IN PIPE MILL.



FIG. 5

ENDS CUT BY DISK CUTTER.



fective work and with saving of more than $2\frac{1}{2}$ cents in cost per weld. In welding 5%-in. flues in the same railroad shop, the cost per weld by the electric process was less than 5c., as compared with a cost of 14c. with the furnace and forge process used in that shop.

In shops equipped with the electric welders, overtime work, such as holidays, Saturdays and Sundays, which require time and a half pay, is often entirely eliminated. Then, when the welder is not being used for flues, by inserting suitable dies it can be employed for welding bar stock or for annealing or for heating and stretching, etc. By means of special dies, the flue welder is often used to weld the return bends to superheater pipes, with savings in time and cost. In one shop visited by the writer, a daily production of 80 to 100 welded 5%-in. diameter superheater tubes was being obtained, as against 20 welds by the formerly used process.

Table I indicates the approximate cost for the electric power only, which is required for certain diameter flues and tubes.

This table was compiled several years ago, and was based on welders now obsolete and on power rates that were higher than at present. Tabulations based on the latest types of welders would show much greater production, and a greater reduction in cost of operation. The cost of electric power for flue welding is much less than the cost of oil or gas for the reason that the electric power is used only the few seconds that the weld is being made, whereas with a furnace, the oil or gas is burned continuously all day long, and must be started going an hour or two be-

fore working time to give the furnace walls time to heat up. Furthermore the electric process makes the shop much more comfortable for all persons working in it—but especially for the welders, who are thus relieved from working around a hot furnace. Also, the electric process eliminates gases and fumes and fire and accident hazards.

For rolling down the welds of safe ends the "Hartz" roller has been found satisfactory and it is usually installed at the left-hand end of the welder so that the work may be quickly unclamped and shoved endwise over the mandrel between the rollers, while still in practically a plastic condition. The time required to roll down a weld is about 2 sec. on this type of roller. But the Hartz roller is limited to welds that are 14 in. or less from the end of the work. For "reclaiming" or "salvaging" where the welds may be anywhere from 2 ft. to 6 or 8 ft. in from the end of the work, a special type of roller with about a 9 ft. throat is necessary. This special roller will also roll down the welds in safe ends. Hence it is preferable to install the special roller only so as to give the

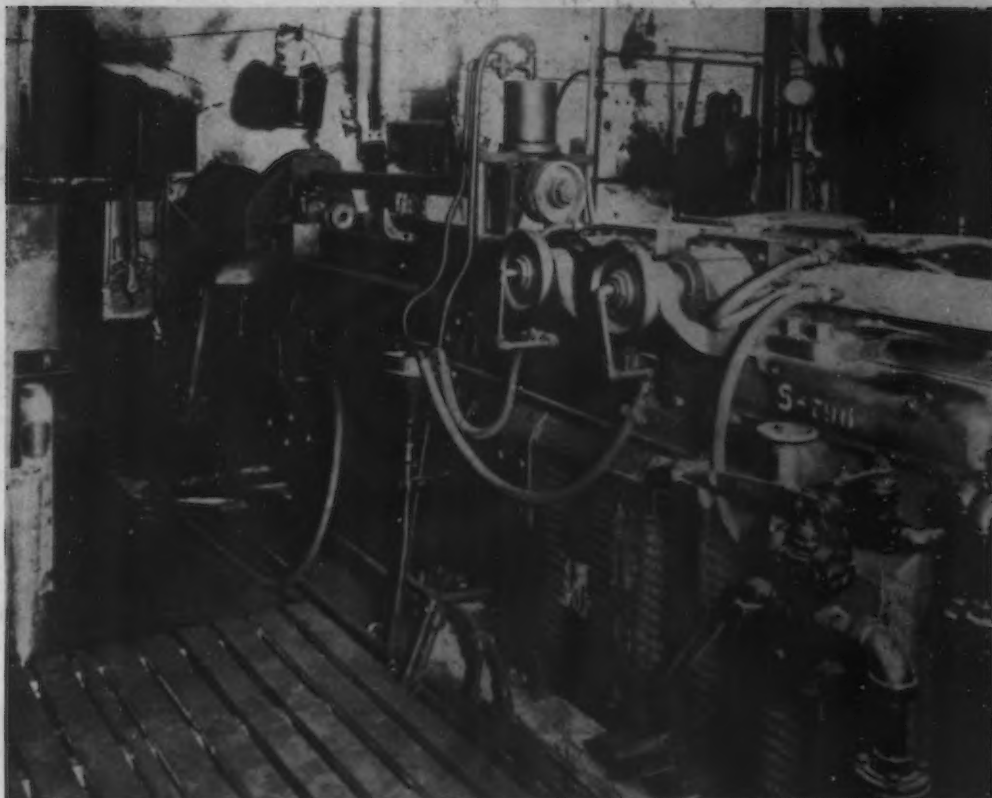
TABLE I—Cost of Electric Power for Certain Diameter Flues and Tubes

Size of Flue, inches	Time in Sec. (welding only, approximate)	Production in 9 Hr., Welded and Rolled	Cost per 1000 Welds at 1c. per Kwhr.
2	4 to 7	700	\$1.25
3	5 to 8	500	1.75
4	20	250	3.00
5%	30	75	5.00

AT LEFT
GENERAL view of
flue shop.

o o o

AT RIGHT
SOME large rail-
roads have in-
stalled as many as
eight or 10 flue
welders in their va-
rious flue shops.



welder its fullest range of usefulness. This rolling device should always be installed at the left-hand end of the welder in line, longitudinally, with the dies, so that the hot work can be shoved endwise to the left, over the mandrel, and between the rollers, the instant it is unclamped. Some shops using

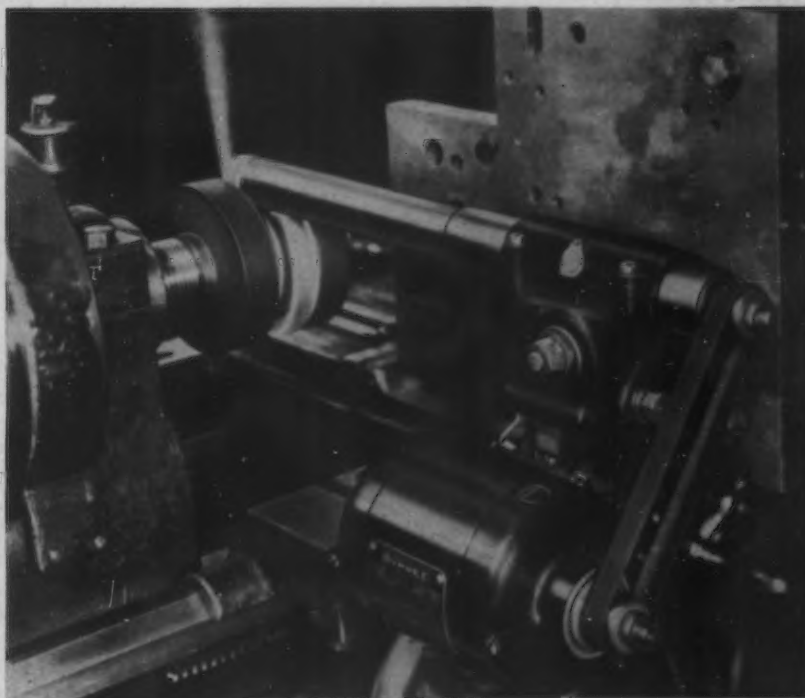
Hartz rollers prefer to install them parallel to, and about 4 ft. from the welder, and directly back of the operator. This is not the best practice, however, for the work must be taken entirely out of the welder, and the operator must turn around in order to get the work into the roller and out again, with consid-

erable loss of time and reduced production.

The best method of cleaning the ends of flues and tubes is by means of a sand paper belt running over two pulleys, similar to a band saw. There are several makes on the market, any one of which will give satisfactory results.

AN enterprising toolmaker devised this ingenious method of finishing forming rollers for the production of pump tubing. The method incorporates an original set-up of a No. 5 Dumore electric lathe grinder.

o o o



Recent Develop



AT LEFT
PAINTS are mixed "by weight" at the finishing department of the Buick Motor Co. This assures uniform colors.

needs of the truck and commercial body car builders.) Research, however, has been continued and these efforts culminated in 1930 in an entirely different product, known as alkyd resins or glyceryl phthalate resins, or just Dulux. To make them naphthalene is oxidized to form phthalic acid and is combined with glycerine and fatty acids pro-



LITTLE does the general public realize the startling changes that have taken place in automotive and other finishes in recent years, which have progressed from japan to Duco and now to Dulux. In the horse and buggy days, and even ancient times, japans, which are black pigmented varnishes based on drying oils, were used and it required five to six days to finish an automobile. These japans were composed of oils, gums, pigments, dryers and thinners. Linseed was the most popular oil; gums were from the sap of trees; lampblack gave the black color; turpentine was the universal thinner and salts of lead and manganese were the dryers.

The first improvement in more than 100 years came in 1900 with the introduction of chinawood or tung oil, which gave a faster drying and more waterproof varnish while it reduced costs. The finished japan was applied to the automobiles by spray or flow coating in two or three coats and baked at high temperatures in gas-fired ovens. (The term enamel in this sense is fast becoming obsolete.) When colored finishes were used, a more elaborate series of coatings were built up sometimes from 10 to 12 coats and required from 20 to 30 days to finish. To make the var-

nish vehicles, resins like Kauri gum, resin or the oil soluble synthetic resins were fused and dissolved in oils, such as chinawood or linseed, and then cooked.

Intensive research, over a period of years, finally resulted in Duco wherein nitrocellulose was substituted for oil as the binder. This upset all existing traditions and was—and still is—an ideal finish. (Its use, however, is restricted to all steel bodies of the pleasure car type, as it does not fill the

duced by the hydrolysis of linseed or chinawood oils.

They are distinct chemical compounds and contain within themselves all the qualities necessary for the finishing material. They do not require blending with oils and are durable, tough and elastic. Finishes with a wide range of physical characteristics can be made from these resins which, in themselves, range from the tough, rubbery solids, Dulux gum, to rather heavy, viscous fluids, Dulux oils. From

AT RIGHT
TEN standard colors are used. Each color is kept in a separate tank in a central storage department and pumped through pipe lines to the corresponding spray booth.



pments in Metal Finishes

By J. B. NEALEY

American Gas Association

the former are made the faster and harder drying types of high temperature baking finishes used on automobiles while the latter provides the vehicle for the high solids, easy brushing paint type finishes. The drying time of these products is shorter than that of oleoresinous type products.

No matter how much has been

coat with the single exception that colors in maroon and cream are given two solid wet coats. This is baked on in a gas-fired oven with a peak temperature of 260 deg. F. The work passes through the oven on a conveyor at a speed of 22 in. per min. and is in the oven for a period of 80 min. Heat is supplied by a series of gas burners located in the lower part of the oven.

For lacquer spraying, however, the parts are first prepared by bonderizing and drying in gas-fired ovens. The parts so treated include fenders, hoods, radiator shells, running boards, and chassis coil springs. Changes have been made in the process whereby the work is treated for a period of only 1½ min. in the bonderizing solution where formerly an immersion of 4½ min. was necessary. The solution tanks were formerly of 48,000 gal. capacity but now 10,000 gal. tanks suffice. The solution formula was altered and its strength changed to make this change possible.

The entire process is as follows:

- (1) Wipe parts with kerosene.
- (2) Clean in pressure spray washer with water at 150 deg. F. and for 45 sec.
- (3) Rinse with cold water by pressure spray for 30 sec.
- (4) Repeat for 30 sec.
- (5) Treat with bonderite by pressure spray for 1½ min.
- (6) Rinse in cold water by pressure spray for 45 sec.
- (7) Chromic acid rinse by pressure spray for one min.
- (8) Dry in gas fired, open flame oven for two min. and 46 sec. This oven is 60 ft. in length.

All of these operations are performed while the work travels along on a moving conveyor consisting of two closed loop chains moving two parallel lines of work. Fenders and running boards are carried by one chain and the balance of the work by the other. This conveyor is 270 ft. long and travels at a speed of 16 ft. per min.

The separate units consist of sheet metal booths or hooded compartments (about 12 ft. high) with

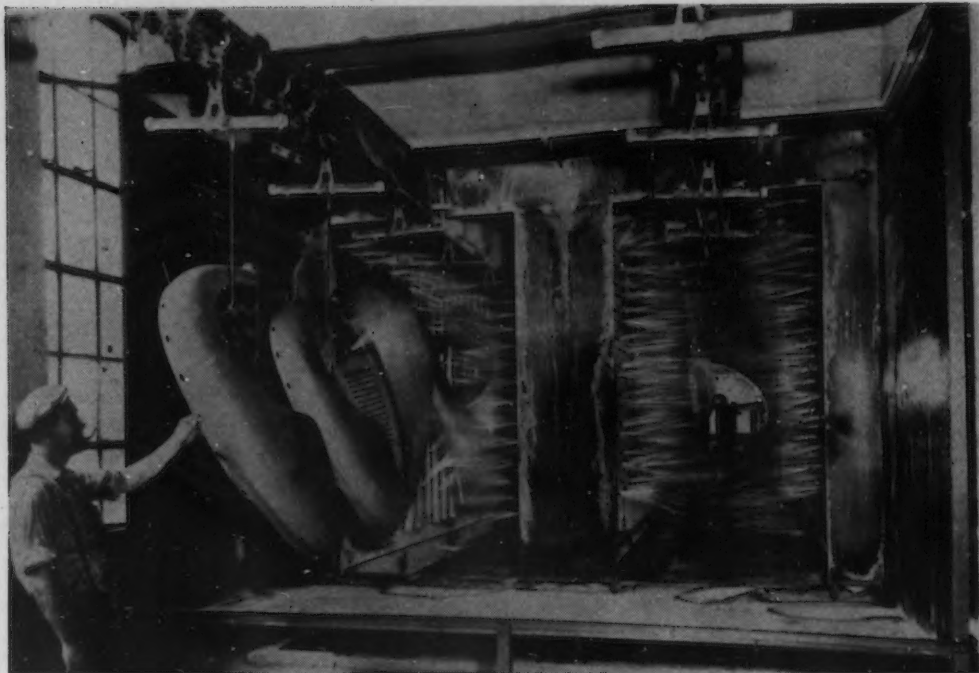


SPRAYING paint on parts. Note flexible system of supplying full complement of colors to each booth.

cut from the time periods necessary for air drying with finishes formerly employed, mass production calls for immediate drying. For this reason, Dulux is baked on, usually in gas-fired ovens at 225 deg. F. and the time period is only one hr.

Delux is used on the head-lamps, tail-lamps and brackets at the Flint plant of the Buick Motor Co. They are received already primed for the spray coat. Here the practice is to spray on one solid wet





AT LEFT

SPRA - BONDER-IZING is performed in units such as shown above.

o o o

BELOW

THERE are four lines of gas fired enameling ovens for all enameled parts of Buick cars. One complete line is shown here.

the conveyor passing through all. The washer is 60 ft. long and contains two rows of vertical perforated pipes through which hot water is forced in a multitude of sprays. A tank below serves as a reservoir in which the pumps work. The bonderizer is 75 ft. in length, the first 24 ft. containing the same type of spraying equipment but using the bonderizing solution. An 8-ft. drain board follows and then a clear water spray rinse occupies a space of 12 ft. and this also is followed by an 8-ft. drain board. The chromic acid rinse, also a spray, comes last and occupies 16

ft. The dry off oven is 50 ft. long and is heated with eight perforated gas pipe burners.

Another process used consists of a single coat of rubber enamel dipped on by conveyor and baked in a gas fired oven for 17½ min. at a baking temperature of 475 deg. F. This is followed by a dipped coat of black primer baked at a baking temperature of 390 deg. For this there is a chain conveyor passing through two ovens with two dips. Each oven is about 50 ft. long and 14 ft. wide and is heated with drilled gas pipe burners located close to the bottom.

Parts that are lacquered are given several coats in quick succession with a few minutes' air drying in between, after baking. The finish is sprayed on in ultra modern booths with floor lighting and positive ventilation. These booths are in pairs in tandem, one side of the work being sprayed in the first and the other in the second. Along one side of the booth is a series of 10 in. vertical tubes about 4 ft. long together with a curtain of falling water. Particles of lacquer are caught by the water while the vapors are drawn down and up the

(CONTINUED ON PAGE 81)





FIG. 1—Logan power-driven roller conveyor forms an arterial highway from end to end of a large machine shop, flanked on each side by idler roller conveyors.

A Portfolio of Unique Conveyor Installations

° ° °

Collected by

FRANCIS JURASCHEK

Consulting Editor, The Iron Age

° ° °



WHENEVER the problem of the handling of materials becomes a vital factor in the orderly flow of production in a factory, there, in one form or another, you are almost certain to find conveyor equipment. Not that conveyor equipment is the only type of mechanical handling mechanism which coordinates the processes of production; but because it inherently embodies the principles of continuous flow, and because it is available in so many different forms, each adapted so surely to the handling problems encountered, it has attained a use and recognition unequalled by any other type of handling equipment.

Many of these uses are quite unusual. It is the purpose of this portfolio to illustrate a few such unusual jobs. Now, one serious difficulty in presenting any unusual illustration of materials handling equipment apart from a serious consideration of the whole problem involved, is the inevitable lack of

data on which the economic phases of the installation must be judged. In effect it is somewhat like an attempt to save the full flavor of a popular novel by reading one paragraph. But in the case of mechanical equipment of any kind, where the use is out of the ordinary, the presentation of the *idea* which determined that use frequently suggests other similar or parallel ideas which can be adapted to advantage in other situations.

The whole subject of the mechanical handling of materials has moved so fast during the past few years that no one finds it possible to keep abreast of the thousands of

new applications which are being made every day. Only by an attempt to classify mentally these applications, and to grasp the theory of the fundamental methods involved, is it possible to understand clearly the significance of the new adaptations. For, basically, there is nothing new in the various methods of handling materials mechanically. For years we have known about and used these methods. What is new from day to day is the often ingenious and generally unusual adaptation of a well-known method, through recognized types of equipment, to the more speedy, more certain, and more



FIG. 2—Thirteen cross idler roller conveyor lines are fed by one roller apron conveyor in a bulk oil filling station. Installation by the Logan Co.



ABOVE

Fig. 3—Mathews roller conveyors run directly through cylinder block boring and reaming machines, and a pivoted section conveyor turns the block end for end in between.

o o o

AT LEFT

Fig. 6—A Lamson slat conveyor set flush with the floor makes a continually running roadway for the collection and transfer of completed orders to the shipping room.

o o o

BELOW

Fig. 7—A short roller conveyor section on a transfer car permits this Logan installation to serve some fifty cleaning and inspection tables at all times without confusion.



BELOW

Fig. 4—A Mathews overhead trolley chain conveyor carries metal stampings down and across a line of inspection tables without pause, on the way to the assembly room.



economical handling of different materials. It is this matter of unusual adaptation which provides the theme for this portfolio—and for other similar portfolios to be published in the future.

Descriptions of Illustrations

Fig. 1—Conveyors foster "straight line" production, and thus cut out unnecessary backtracking and double handling. They eliminate much of the fetch-and-carry criss-crossing of miscellaneous unorganized handling which eats into efficiency and increases production costs. This Logan installation in a large machine shop emphasizes just such advantages. In the center of the bay a line of power-driven rolls forms a main arterial highway from stock room to assembly room. At either side of this conveyor are lines of idler rolls, set level with it. Tote pans carrying raw stock are pulled over from the main line to these idler lines by each operator, according to the tags on the tote pans, and rest there until the work on the part is finished. Then the operator slides the tote pan back on the main conveyor, which carries it to the assembly room.

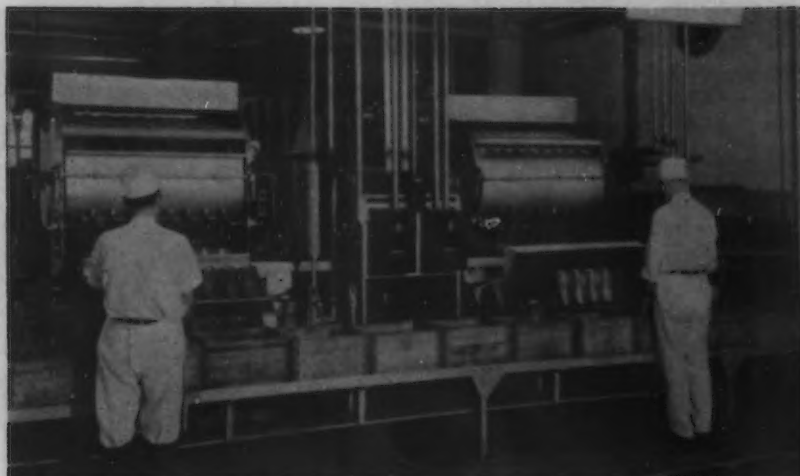
AT RIGHT

Fig. 5—A Chain Belt double chain conveyor carries crates of bottles to a battery of bottle washing machines at a rate that keeps the machines filled all the time.



Fig. 2—The handling of oil drums in a bulk filling station is ordinarily a tedious and wearisome job. Logan showed one of the big oil companies how to lift these burdens from the hands of men, and to save money at the same time. A roller apron conveyor carries empty drums along one side of the filling room, across thirteen lines of cross idler roller conveyors, separated by subway gratings. Each of these idler conveyors leads to a filling machine, and then to another gathering-line roller apron conveyor which takes the filled drums to the shipping platform. The idler roller lines provide temporary storage for empty drums.

Fig. 3—Mathews has here made a unique conveyor set-up, running through heavy cylinder boring and reaming machines in series in the plant of a manufacturer of industrial gasoline engines. As the engine block comes along on the roller conveyor to each machine, an automatic stop centers it in position for the required operation. The cylinders on one side of the V-block are bored on one machine and reamed on the next. Then,



AT RIGHT

Fig. 8—A Mathews roller spiral chute lowers packages of incandescent lamps quickly and without damage from a high level conveyor to a floor level conveyor.



BELOW

Fig. 9—A Chain Belt slat-and-flight conveyor takes raw materials in packages upstairs, where they are dumped into hoppers and come through scales to an inclosed mixing belt.



between the last reaming machine and the next boring machine in the line, a special roller conveyor section mounted on a vertical pivot turns the block end for end so that it enters the next machine in reversed position, for operations on the opposite bank of cylinders.



Fig. 6—A Lamson slat conveyor set flush with the floor in a large paper products plant forms a continuously moving highway running through the middle of a large production bay. Packages of any type may be set on this moving roadway at any point and taken off at any

available with a series of short, transverse roller conveyor sections, by means of the interconnecting transverse section built onto a transfer car running on rails. Castings in tote pans are delivered by means of this transfer car to any desired cleaning and inspection table along either side of the track; the finished castings being removed in pans the same way. Instant and easy access is thus provided to some fifty cleaning tables at all times.

Fig. 8—A Mathews roller spiral chute lowers packages of incandescent lamps quickly, smoothly and without damage from a high level gravity roller conveyor to a floor level power driven roller conveyor leading to the shipping rooms.

Fig. 9—Two Chain Belt installations are shown here. A combination wooden slat and metal flight conveyor carries bags and barrels of raw materials on an incline from a lower floor to an upper floor, where the packages are broken open and the contents dumped into

Production thus continues in an unbroken straight line.

Fig. 4—A Mathews overhead I-beam trolley chain conveyor carries completely stamped and formed metal plates down and across a line of inspection tables on the way to the assembly room, without loss of time. The carrying hooks on each unit permit any plate to be taken off the line and replaced at any time.

Fig. 5—Conveyors may be regulated to suit the production-pace of machines, or may be used to set the pace of production, as is most convenient. Here a Chain Belt double chain conveyor carries crates of bottles past a battery of bottle-washing machines, the operators removing the bottles from the crates by hand and placing them on the receiving tray of the washing machine. The conveyor runs at a rate that enables the operators to keep the washing machines completely filled at all times. It then carries the empty crates around a corner to positions in front of the bottle filling machines. While dairy procedures are of little interest to metal working concerns, the principle illustrated is capable of infinite adaptation.

ABOVE

Fig. 10—For "live" storage of flat sheets this Mathews layout is ideal. The fixed sections of roller conveyor can be reached by the transfer sections shown in the foreground.

o o o

AT RIGHT

Fig. 11—Moist, crushed coal, elevated from the crusher in a bucket elevator, is drawn to furnace hopper openings by a scraper conveyor. A Chain Belt installation.

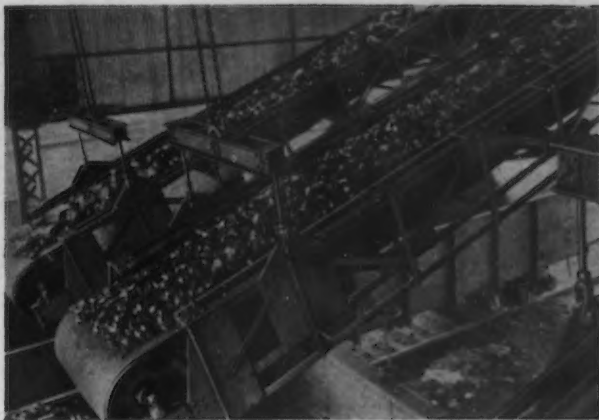


other point. Here it is principally used to take completed orders to the shipping room. As the ancient Greeks used to say, "Everything flows," and confusion is non-existent.

Fig. 7—This Logan installation is in the cleaning room of a foundry making malleable castings. The unique feature of the layout consists of the longitudinal movement

receiving hoppers. From these hoppers the materials descend through apportioning scales shown at the left to the totally enclosed mixing belt conveyor housed within the rectangular metal tunnel. Practically automatic continuous flow is thus achieved, from receiving department to the mills.

Fig. 10—This is an ideal storage-room layout for flat sheets of any



o o o

AT LEFT

Fig. 12—Two Chain Belt coal-loading boom belt conveyors take the prepared coal from the tippie to the railroad cars without breakage, handling it gently and quickly.

o o o

Fig. 14—The Link-Belt foundry conveyors shown are installed in the National Malleable & Steel Castings Co. plant at Cleveland, and comprise the small mold unit from the shakeout end. The equipment shown includes the prepared sand hoppers, the overflow spouts, the mold conveyors, the shakeout and the cooling hood. The double line of conveyors coming through the cooling hood from the pouring stations turn on the large horizontal wheels, and go back at either side in continuous operating cycles.

description. The fixed position Mathews idler roller conveyor sections are cut at one end of the room by a three-rail industrial track over which movable sections of similar conveyors run. Transfers of stock from any fixed section to any other fixed section, or to production, may be made with ease and without picking the stock up. In every sense of the word, this type of storage is "live."

Fig. 11—In this Chain Belt illustration, moist, crushed coal is elevated from the crusher by a bucket elevator, dumped by enclosed chute onto a scraper conveyor, and by the scraper conveyor carried along to the opening which feed the coal to the various furnaces. When the gate of any opening is closed, the scraper carries the coal in the trough along to the next opening.

Fig. 12—Two Chain Belt coal-loading boom belt conveyors take the coal from the sorting screens of a tippie and deliver it without breakage to the waiting railroad cars. Such loading booms may be used to deliver many types of materials to any required point smoothly and safely from an elevation, breaking the fall gently.

Fig. 13—This Jeffrey continuous bucket elevator is of the so-called "super capacity" type. The buckets are 48 inches wide, and due to their shape and the method of mounting on the chains, they will carry a larger percentage of maximum size material. They are self-loading from a pile at the bottom of the elevator, and self-discharging as the buckets turn over the head wheel.



o o o

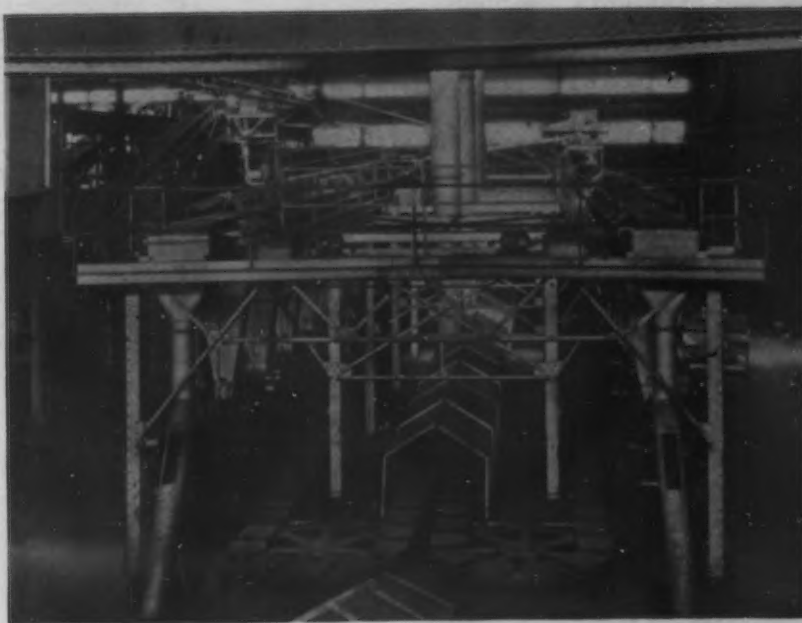
AT LEFT

Fig. 13—A Jeffrey continuous bucket elevator handles a larger proportion of maximum size material because of the shape of the buckets.

o o o

BELOW

Fig. 14—Two Link-Belt small mold conveyors working on continuous operating cycles in a malleable casting plant.



Ryerson Introduces New Steel Certification Plan

A NEW unique plan that will aid steel users to secure more uniformly satisfactory results has been originated by Joseph T. Ryerson & Son, Inc. The system, to be known as the "Ryerson Certified Steel Plan," undertakes to select whole heats of steel that have particularly desirable qualities, make thorough tests and give the user a report on the analysis, tests, etc. The company has been working on the plan for several years, adjusting stocks and ironing out operating problems. The plan naturally is of particular value on the alloy steels that usually require heat treatment before use.

Most of the alloy steel used today is subjected to heat treatment before use, for the purpose of developing strength, hardness, resistance to shock, or other special physical characteristics. The response of alloy steel to heat treatment depends partly on analysis and partly on the general hardening characteristics of the particular heat in question, these characteristics being governed by the structure of the material, inherent grain size, etc.

The accuracy with which a melter can work is limited, and therefore, no producing mill can accept specifications for exact analysis, but must be allowed a quantitative range of each element.

The Society of Automotive Engineers has compiled a set of specifications covering the great majority of alloy steels used today. In compiling these specifications, it has worked with the steel producers and has narrowed the limits of composition as far as it is practical for the steel makers to follow. These limits, however, are relatively wide and, therefore, steel specified only to the S.A.E. specifications may vary greatly in heat treatment response from one heat to another. This variation frequently results in non-uniform results and the extra expense of re-treatment.

When large tonnages are involved, the user can purchase whole heats and it is then practical

for him to analyze each heat and also test it for heat treatment response. In this way he is able to control his heat treatment process so as to offset any differences be-

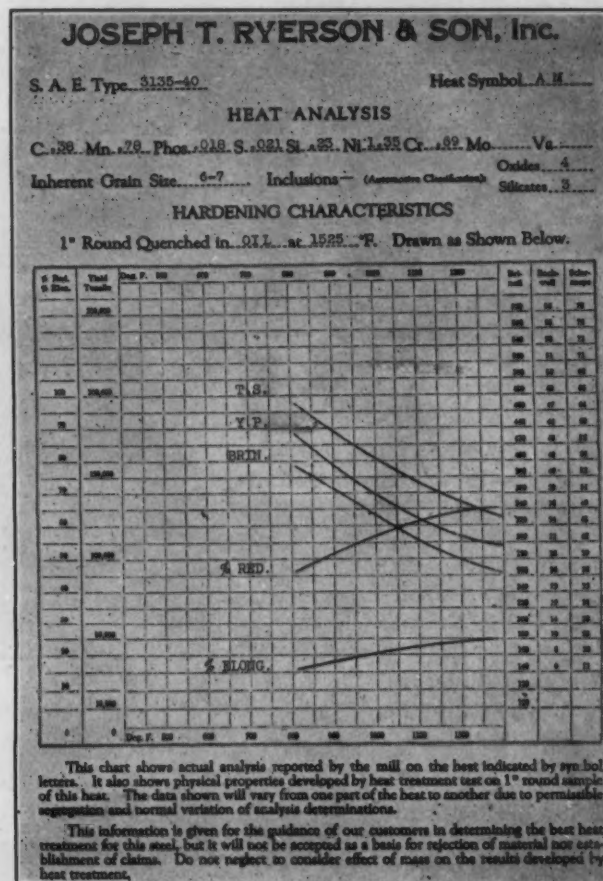
To accomplish the desired result, there were two fundamental problems to overcome.

The first was to secure standard alloy steels for stock which con-

o o o

RYERSON Certified Alloy Steel Data Sheet which is used for the higher alloys that are hardened by quenching. One of these Data Sheets, covering the particular steel shipped, is sent to the customer. It gives him information upon which he can predicate heat treatment results without making tests, etc.

o o o



tween heats. When average lots of alloy steel are purchased from stock, the customer can hardly afford to run expensive analysis and heat treatment tests on the different bars as they are received.

The Ryerson plan solves many of the problems that have developed during the rapidly increasing use of alloys. Under this plan the company selects entire heats of alloy steels that come within certain narrow analysis limits. The steel is tested for chemical and heat treatment characteristics and complete data is prepared for delivery to every customer buying the steel, whether only a few bars or several tons.

formed to an analysis range closer than that specified in the S.A.E. ranges, and which were closely controlled in general hardening characteristics such as inherent grain size, etc.

The second problem, after having secured such steel, was to develop a method of informing each customer of the complete analysis and heat treatment characteristics of each bar shipped to him.

The first problem was solved by writing specifications for all their alloy steels on a much closer chemical analysis basis than the standard S.A.E. specifications and including in these specifications

other factors governing the heat treatment responsiveness of each type of steel. Arrangements were made to watch heats and select only those that came within this restricted range. The heat is then identified by letter symbols and later rolled into bars, bearing the same letters.

Identification letters are stamped on the ends of each bar. In the case of small bars, the bundles are tagged. Heat treating tests are made on standard samples from each heat.

All bars produced from a heat carry the identifying letters assigned to that heat, so the only problem remaining was to transfer the accumulated information about

carburizing steels give the heat analysis identifying letters, McQuaid Ehn grain size, cleanliness rating, and also the results of a carburizing test of a standard sample. This shows the hardness of the case, the effective depth of the case and the physical characteristics of the core. In the case of the quenching steel, the analysis, identifying letters, McQuaid Ehn grain size and cleanliness rating are shown, together with a chart showing curves representing tensile strength, yield point, elongation, reduction of area, Brinell hardness, etc., as developed by test specimens quenched at a suitable temperature for the analysis and drawn to various temperatures. This information is delivered im-

mediately to the customer so that it is received before the steel is subjected to heat treatment. The heat treater then has complete information on the particular steel with which he is dealing, as well as a record for his file as to the composition of the steel used in every job which has gone through his shop.

To summarize the plan of Ryerson Certified Alloy Steels:

1. There is available from warehouse stock, alloy steel which has been selected to meet specifications much closer than the standard S.A.E. ranges and is accurately controlled in regard to grain size and other hardening characteristics.

2. All bars except very small diameters are identified by letter symbols stamped on the ends of the bars for purposes of positive identification. Small bars are tagged.

3. All bars have been metallogurgically tested and the results of these tests which cover both chemical analysis and heat treatment response are tabulated and transferred to similarly identified data sheets.

4. When a shipment is made to a user, a data sheet for the bars shipped is put in his hands in sufficient time so that it can be transferred to the heat treating department before that department is called upon to subject the steel to heat treatment.

It is expected by the company that this plan will save time and money for users of alloy steel and assure more uniform results than have been attained.

JOSEPH T. RYERSON & SON, Inc.	
S. A. E. Type.....4615-20	Heat Symbol.....L.H.
HEAT ANALYSIS	
C.....1.0 Mn......52 Phos......024 S......036 Si......27 Ni......14 Cr...... Mo......89 Va.....	
Inherent Grain Size.....5-8 Inclusions..... (Automatic Classification)	Oxides.....3 Silicates.....2
CARBURIZING CHARACTERISTICS OF THIS HEAT	
1" Round Carburized.....9 Hours at.....1700 Deg. F.	
Cooled in Pot. Reheated to.....1475 F. Quenched in.....Oil	
Case	Hardness.....95 Rockwell C.
Physicals	Depth......099 Inches
Core	Tensile Strength.....119,000 Lbs. Per Sq. Inch
Physicals	Yield Point.....91,000 Lbs. Per Sq. Inch
	Elongation.....21 % in 2 inches
	Reduction of Area.....50 %
	Brinell Hardness.....245

This chart shows actual analysis reported by mill on heat indicated by symbol letters. It also shows results of case hardening test made on a one inch round sample taken from this heat. These figures may vary from one part of the heat to another due to permissible segregation and normal variation of analysis determinations.

This information is given for the guidance of our customers in determining the best heat treatment for this steel, but it will not be accepted as a basis for rejection of material nor establishment of claims. Do not neglect to consider effect of time on the results developed by heat treatment.

RYERSON Certified Alloy Steel Data Sheet for the case carburizing steels. These Data Sheets are made up on every heat of steel placed in stock. When carburizing steel is ordered, one of these Data Sheets is sent to the customer giving complete information on the steel shipped.

the steel to the customer who buys the bars from Ryerson stock. It would not seem difficult to give the customer this information, but from a practical standpoint, it presented many problems not the least of which was that the information must be given to the customer before he uses the steel.

In order to condense the information regarding these special heats, two types of charts were devised, one for carburizing steels (case hardening) and the other for steels of higher hardening characteristics which are heat treated by quenching. These charts in the case of the

ALL Ryerson Certified Alloy Bars are clearly identified by heat symbol letters stamped on the end of the bar. The same symbols are repeated on the Ryerson Certified Alloy Steel Data Sheets which are sent to the customer.



Conveyor-Type, Scale-Free



THE automatic screw machine, the turret lathe, the multiple spindle drill press, and other similar machines, have been developed to meet the demands of modern industry for greater production, uniformity and lower overall costs. The success of these machines has been due to their accurate and automatic operation which, to a great extent, eliminates the errors of operators and to the fact that they can turn out large quantities of parts with little attendant labor.

Most of the parts produced by such machines must be subjected to a heat-treating operation before they can be placed in service. It is, therefore, necessary to utilize heat-treating equipment and methods which will enable the heat-treatment not only to keep up with

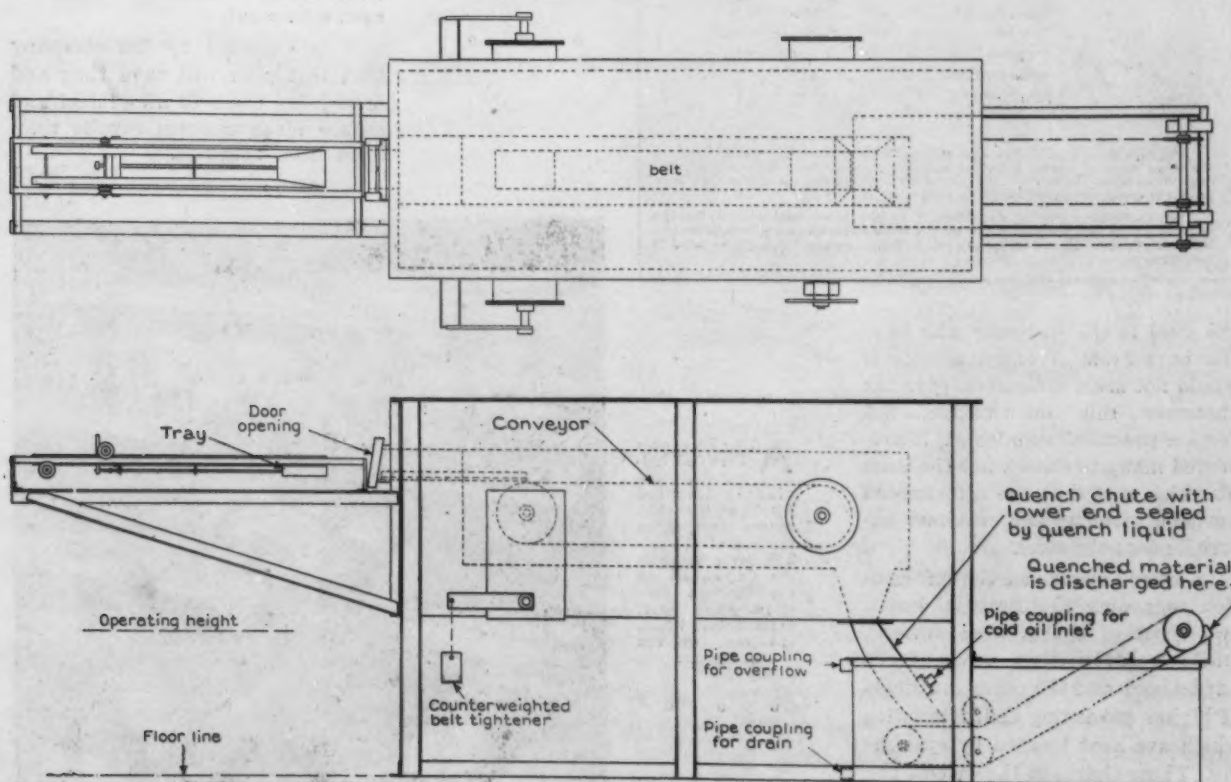
production, but to accurately and uniformly treat the work with a minimum of cost.

Keeping up with production implies the use of a heat-treating equipment capable of handling large numbers of parts. Accuracy and uniformity of treatment imply definite control of temperature, time at temperature, and speed of quench, if hardening is considered. Low overall cost implies the keeping of labor, operating, maintenance, and reject expense to a minimum value consistent with the quality of work desired.

Consideration of the above factors in regard to the hardening of numerically large quantities of parts led, a few years ago, to the development of a conveyor-type, scale-free hardening furnace; an equipment which is, in fact, a new tool for industry, as it meets the requirements stated in the preceding paragraph. It is to heat-treating operations what the screw machine and other similar machines are to machining operations.

Briefly, the conveyor-type, scale-free hardening furnace consists of a refractory-lined, heat-insulated chamber inclosed in a welded sheet-steel casing. The heating chamber, as is shown in Fig. 1, incloses an endless belt conveyor arranged so that material is placed on the belt at one end of the chamber and is heated while being transported to the other end. Upon reaching the

FIG. 1—Outline of conveyor-type scale-free hardening electric furnace showing arrangement of tray loading mechanism and quench tank.



Hardening Furnaces

By A. R. RYAN

Industrial Department, General
Electric Co., Schenectady

discharge end of the conveyor the material falls off through a sealed chute which directs the material into the quenching liquid. The furnace is heated by means of resistors proportionally spaced throughout the length of the heating chamber and arranged in several separately controlled circuits so that accurate and automatic control of temperature may be obtained along the length of the furnace. A variable speed drive makes it possible to adjust the conveyor speed so that thorough and accurate heating of the materials is assured.

Material to be treated is placed in the furnace in one of several ways, depending upon the type of part and local operating conditions. Large, heavy parts, such as shafts, very large bolts and the like, may be loaded by placing them on the fore-hearth and shoving them forward until they are on the con-

veyor. When the material is all of about the same size, it can often be loaded through an inclined chute extending into the furnace.

The most universal method of loading is with a tray loading device such as is shown in outline in Fig. 1 or in operation in Fig 2. With such equipment the material to be treated is placed uniformly in the loading tray, which being supported on a carriage, is run into the furnace. The tray then drops the parts uniformly on the conveyor.

Tray-loading devices are usually manually-operated, as they are easy and simple to operate and can be used to load very small parts,

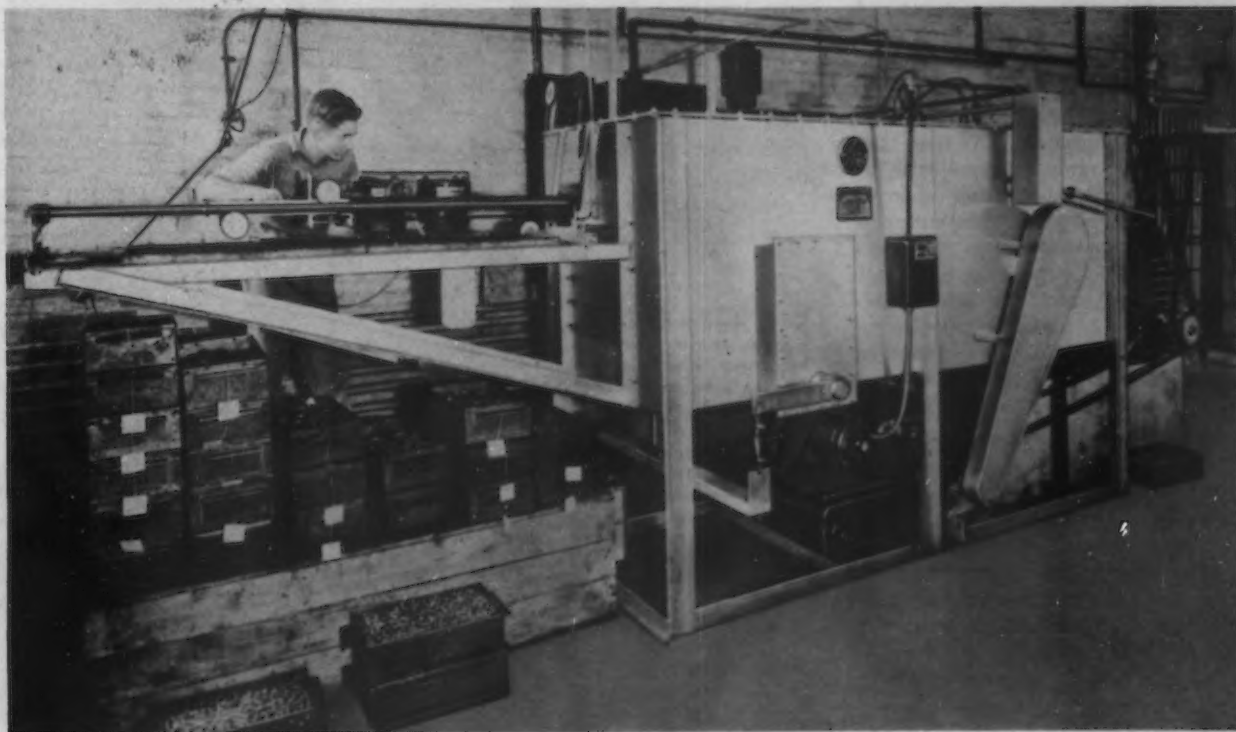
such as those shown in Fig. 3, or very large parts such as 1½ in. x 7 in. bolts. A time clock is used to inform the operator when the conveyor has moved forward sufficiently so that another charge may be placed in the furnace.

Automatic tray-loading may be utilized for parts which can be fed to the tray from a hopper. For such operation, the tray-operating mechanism is timed by a device coupled directly to the furnace conveyor drive.

Parts which are discharged from the furnace into the quenching liquid drop onto an inclined conveyor which slowly transports them through the quenching bath and carries them out of the quench tank. The parts are then automatically discharged either into tote boxes or onto a second conveyor. (See Fig. 4.)

Furnaces of this type, when op-

FIG. 2—Conveyor-type scale-free hardening electric furnace showing tray loader in operation. For discharge end view see Fig. 4.



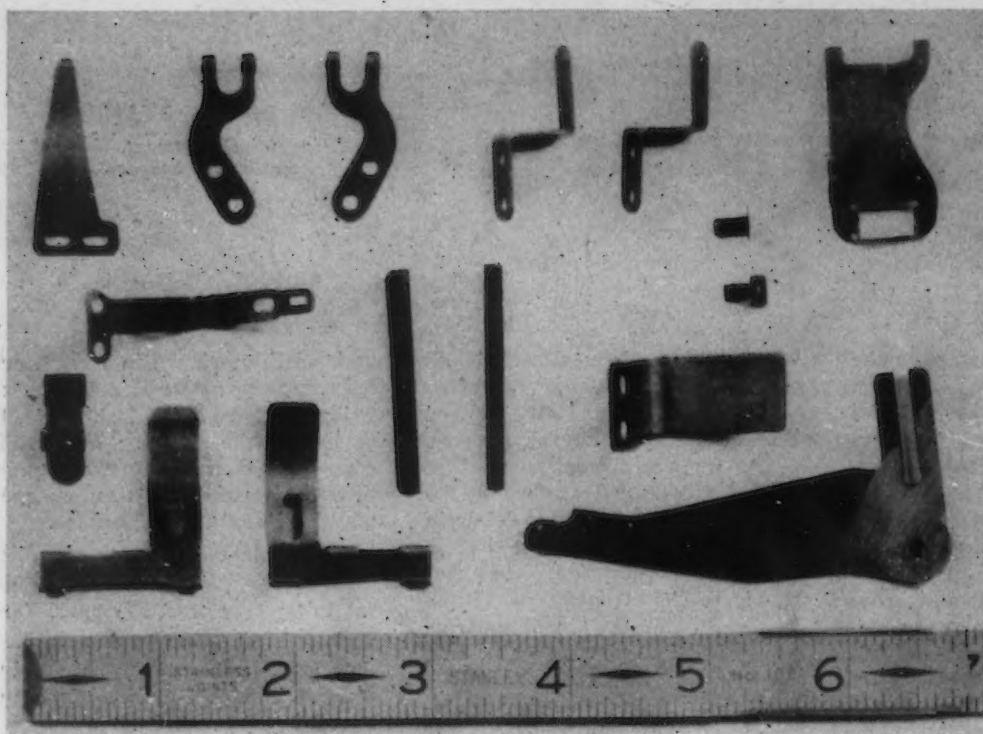


FIG. 3—Typewriter parts hardened in conveyor-type scale-free hardening electric furnace.

TABLE I

Approximate, typical analysis of a coke oven gas and the protective atmosphere resulting from treating the coke oven gas in a combustion type atmosphere controller at an air-to-gas ratio of $2\frac{1}{4}$ to 1.

	Per Cent by Volume						
	N ₂	H ₂	O ₂	CO	CO ₂	CH ₄	C ₂ H ₄
Coke Oven Gas.....	5.1	54.2	1.6	7.0	1.8	27.2	3.1
Protective Atmosphere	67.8	17.0	..	11.0	4.2

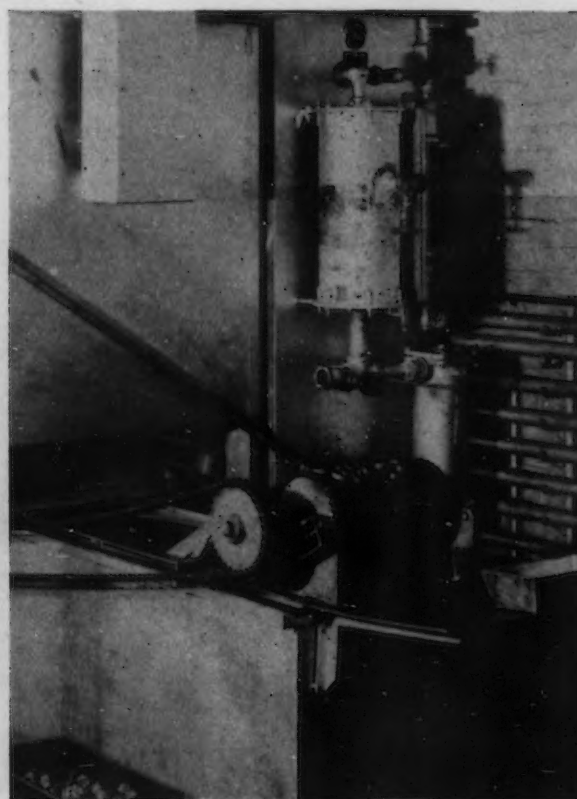
erated with a protective gas atmosphere, will produce hardened steel parts entirely free from scale if bright and clean when it entered the furnace. The part after quenching, will be practically free from discoloration, so that the metallic luster is retained without any cleaning other than removal of the quenching oil. The entirely-enclosed construction of the furnace, its quick-acting door, welded steel casing, and the sealed discharge chute, make it possible to accurately maintain a protective atmosphere in the furnace with a minimum consumption of gas.

The protective atmosphere for these furnaces is usually provided by a combustion-type, furnace-atmosphere controller, similar to that shown in Fig. 5. The atmosphere controller utilizes either coke-oven gas, natural gas, butane or propane, and, by partially burning the gas, produces a mixture of products of combustion, and partially cracked gases, which after passing through a suitable processing op-

eration, such as partial removal of water vapor, is suitable for use in the furnace. Table I shows a representative analysis of the protective atmosphere used in such a furnace.

Furnaces of this type have been built for capacities ranging from

FIG. 4—Conveyor-type, scale-free hardening electric furnace showing discharge end, quench tank and small size combustion type furnace atmosphere controller. Equipment used to scale free harden drill chuck parts.



80 to 1200 lb. per hour, and for temperatures as high as 1700 deg. F. A wide variety of items ranging from typewriter parts, as shown in Fig. 3, to large bolts $1\frac{1}{2}$ in. diameter x 7 in. long, are being treated successfully. Even crankshafts for small gasoline engines are being treated in such a furnace.

It might be thought that a furnace of this type would prove economical and practical only if large quantities of almost identical parts were to be treated. This is not true, as experience has proved that furnaces of small poundage output often provide large savings due to the elimination of scale-removal and cleaning operations, the reduction of handling expense and the reduction of rejects because of the uniformity of product.

Some idea of the diversity of possible applications and the size of furnaces utilized can best be obtained by a brief summary of several typical installations.

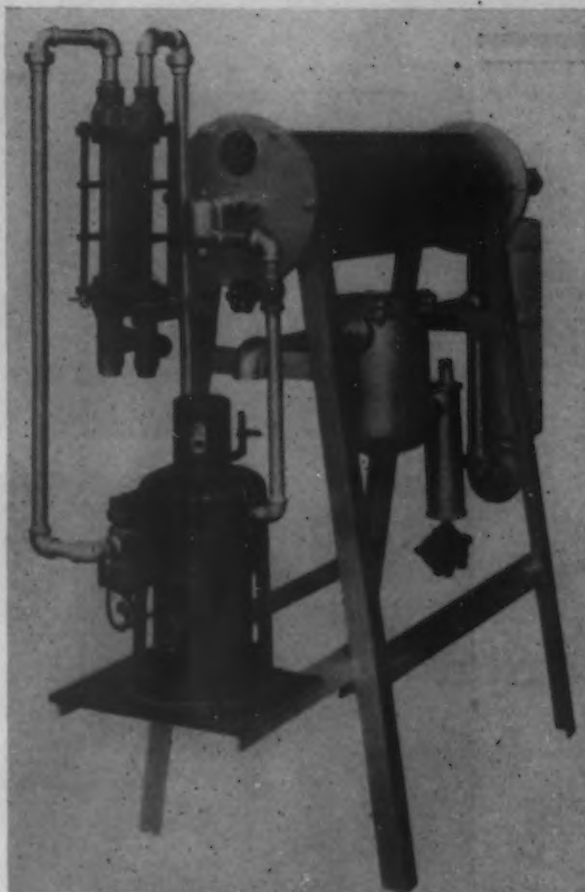
Typewriter parts, as shown in Fig. 3, are being hardened in two furnaces, each equipped with tray-loader and quench tank. Each furnace is rated 24 kw. and has active conveyor surface 8 in. wide and 5 ft. long.

A nationally-known manufacturer of drill chucks utilizes an 80 lb. per hour furnace for the scale-free hardening of chuck sleeves, and other chuck parts such as jaws and keys. This furnace is rated 24 kw. and has conveyor dimensions 8 in. wide and 5 ft. long. The power consumption, when producing 80 lb. per hour at 1500 deg. F. is approximately 15 kwh. Uniformity of product and elimination of scale removal have more than justified the installation of this furnace.

A 300-lb. per hour furnace is used to harden roller chain links. This furnace, which utilizes a chute, loading device, is rated 58 kw., divided into three separately controlled resistor circuits in the length of the furnace. The furnace conveyor is 18 in. wide and 9 ft. long. The power consumption is approximately 39 kwh. when producing 300 lb. per hour at 1500 deg. F. The uniformity of product as hardened is maintained between plus or minus 2 Rockwell C scale.

A manufacturer of large bolts and nuts utilizes an 800-lb. per hour furnace and tray loader to harden a wide variety of sizes of

FIG. 5—Combustion type furnace atmosphere controller used to process coke oven gas, natural gas, butane or propane and produce a protective atmosphere suitable for scale free hardening.



bolts and nuts. The furnace is rated 130 kw., divided into three separately controlled resistor circuits. The furnace conveyor is 24 in. wide and 13 ft. long. When producing 800 lb. per hour of parts hardened at 1500 deg. F., the operating economy is approximately 10 lb. per kwh.

A large industrial plant, which manufactures a good portion of its own cap screws and bolts, utilizes another 800-lb. per hour scale-

free hardening furnace for the hardening of alloy steel cap screws and the strain relief anneal of cold headed cap screws. This installation is unique in that the screws are automatically loaded into a washing machine for removal of cutting lubricant and are then automatically loaded into the furnace from which they are automatically quenched. Handling operations in this plant have been reduced to a minimum.

Foundry Conference Plans Completed

THE completed plans for the regional conference of the St. Louis district chapter, American Foundrymen's Association, provide for the reading of over 20 papers on foundry problems. The meeting, which is to be held at the Missouri School of Mines and Metallurgy, Rolla, Mo., will open the morning of Oct. 8 with a discussion on foundry sands, followed, in the order listed, by sessions devoted to refractories, metallography, non-ferrous founding, gray iron and

alloy irons and steel foundry problems.

Among the papers to be presented are "Sand Reclamation, Sand Conditioning and Sand Control," by L. B. Knight, National Engineering Co., Chicago; "Lining of Reservoirs and Ladles Suitable for Soda-Ash Treatment," by J. J. Offutt, A. P. Green Fire Brick Co., Mexico, Mo., and "Insulation, Operation and Maintenance of Nonferrous Furnaces," by P. J. Myall, Fisher Furnace Co., Chicago.

Further information concerning the conference can be obtained from J. W. Kelin, 4041 Park Avenue, St. Louis, secretary of the association.



A STEEL plant today is a safer place than most people think. According to the National Safety Council's statistics the accident rate in the steel industry is 40 per cent less than for industry as a whole. The reason for it is that the management and the men who work there make it so. The above are action shots taken at a first-aid meet recently staged at the Bethlehem Steel Co.'s, Bethlehem plant. Cash prizes of \$25, \$10 and \$5, respectively, were awarded to each member of the teams winning first, second and third places. (Upper center), Teams confer on a hypothetical accident. It's a compound fracture. (Above), Close-up of properly applying the splint. Right, Dr. Loyal A. Shoudy, chief of Medical Service. (Below), Ready for the ambulance. (At right), Plant manager R. A. Lewis congratulates the captain of the winning team.



New Sleeper & Hartley Spring Making Machines

TWO new spring making machines, namely, a universal spring coiler and a torsion spring machine, and an improved wire straightening machine are being announced by Sleeper & Hartley, Inc., Worcester, Mass.

Designated as the Three-In-One, the new universal spring coiler features increased accuracy, wide range of wire feed and ready convertibility into a continuous coiler, the latter simply by throwing the cut-off out of action.

This machine, pictured in Fig. 1, is made in four sizes, with capacities as follows: No. 0, series 609, wire gage 0.004 to 0.025 in.; No. 1, series 610, wire gage 0.018 to 0.062 in.; No. 1½, series 650, wire gage 0.034 to 0.105 in.; and No. 2, series 651, wire gage 0.034 to 0.135 in.

Design features include provision for selectively changing the length of wire feed, changes from one length to another being made merely by moving two levers, thus eliminating the former necessity of removing and replacing of change gears, with obvious advantages, particularly on short runs. Use of anti-friction bearings, hardened gears and shafts, and multiple-disk clutches make for increased accuracy of operation, and, with other design features, increased produc-

tion capacity. Variable-speed drive through a fully-inclosed motor and Reeves variable-speed device, is regularly furnished. In addition to the greater accuracy, the ease of operation, and the increased versatility, the Three-In-One machines are said to be much more durable construction.

Torsion Spring Machines Are Anti-Friction Bearing

The new line of torsion spring machines are equipped with anti-friction bearing spindles to provide greater efficiency and longer life of the machines, as well as a more accurately controlled product. Standard equipment includes a double acting cutting-off slide which will not only cut off right and left-hand springs, but will also make bends on the long end of torsion springs, thus eliminating the necessity for an additional operation.

These machines, shown in Fig. 2, are made to accommodate a four slide attachment for cutting and forming ends, the attachment itself being available as a separate accessory. Thus, certain types of torsion springs formerly manufactured in two or more operations on separate machines may be made on the one machine, with consequent savings in time and labor. Construction is

such that ample time is allowed for the end-forming operation. Variable-speed drive with individual motor or single pulley is provided.

Improvements that permit faster operation, without sacrifice of accuracy, feature the improved wire straightening machines. They include new double high-speed fliers with take-up blocks of a size designed to overcome the danger of putting a set in the wire after straightening. These machines, also motor driven, are entirely self-contained.

Newton Steel Plant Sold at Auction

THE plant of the Newton Steel Co. at Monroe, Mich., was put up at auction Aug. 24 and a bid of \$2,500,000 made by the Central National Bank, Cleveland, the only bid received, was accepted by the Commissioner of the Monroe County, Mich., Circuit Court.

The Cleveland bank as representative of the bondholder held a judgment against the Newton plant for \$4,057,344 for delinquent bonds and interest. About \$3,000,000 of the bonds are owned by the Republic Steel Corp. The Newton plant is operated by Republic. The sale of the plant is subject to confirmation by the Monroe County Circuit Court.

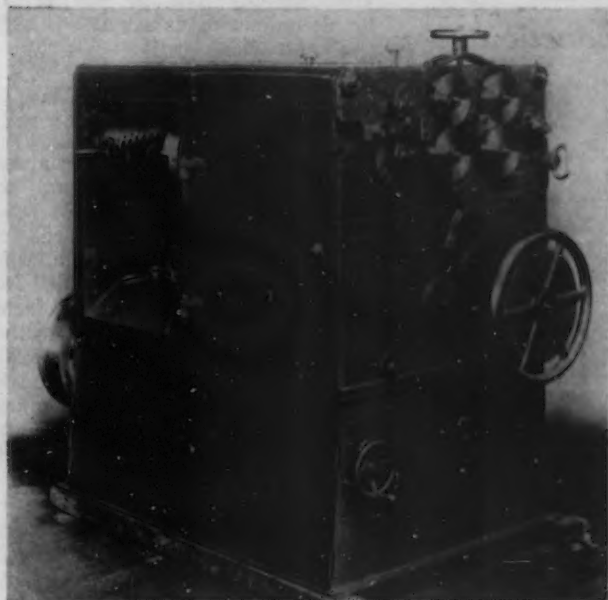


FIG. 1—Selective method of changing length of wire feed is a feature of this universal spring coiler. (Above)

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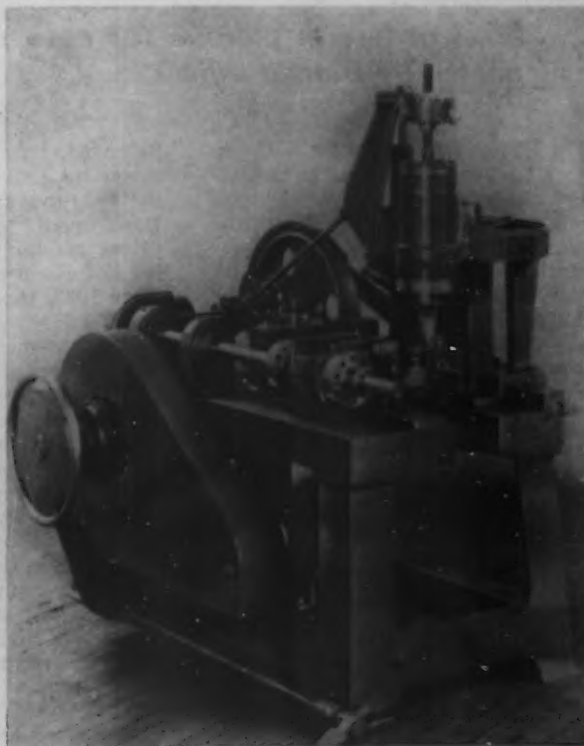


FIG. 2—New S & H torsion spring machine. (At Right)

THIS WEEK ON THE ASSEMBLY LINE



... Favorable spread between auto factory payrolls and purchasing power (up 19 per cent) shown by Labor Department reports.

o o o

... Ford glass plant runs 500 mile ribbon of glass on 'round-the-clock schedule for 139 consecutive days.

o o o

... Canadian steel plant opened with Government aid to boost employment in border cities.

o o o

... Steel orders in volume for auto production reported by Detroit offices.

These figures are well supported by similar data of the State Department of Labor and Industry which, incidentally, revealed that the greatest increases in automotive workers' wages have come in the last month or so, not earlier in the year as might have been expected. Between July, 1936, and July, 1937, average weekly earnings in the automobile industry jumped from \$31.02 to \$33.84, an increase of \$2.82, but \$1.24 of this came into the picture between June and July of the present year. The increase in the last year, incidentally, is less than 10 per cent, although the average for Michigan's industries as a whole is 12.2 per cent.

Ford Makes a Record in Glass Production

When conversation in this automotive town swings around to steel, it usually touches on the possibility that Henry Ford, in his steel plant at the Rouge, will probably not be satisfied until he has a continuous process from molten steel to finished sheet without interruption. If that ever comes true, there will be a mark to shoot at, set in the Ford glass plant, which recently turned out in one piece a 500-mile ribbon of glass in more than four and one-half months of uninterrupted production. The glass sheet, 51 in. wide, is the longest ever produced in the Ford plant and company engineers said that they believed it was the longest ever made anywhere. Made up into safety glass, it will be used as windows and windshields on Ford cars and trucks. The 'round-the-clock sched-

DETROIT, Aug. 30.—Going back to the time when pocket-books were first turned inside out and their linings searched, the Automobile Manufacturers' Association, quoting from reports of the United States Department of Labor, shows an amazing picture of the variations in purchasing power and cost of living in automotive centers since 1929.

Current automobile factory payrolls have a purchasing power 19 per cent higher than in the previous peak year of the industry, the association says. Recent increases in automobile factory wages and the current high level of steady employment are double boons to factory workers in the industry, the A.M.A. says, because of the continued low cost of living in automotive centers. The bugaboo of high cost of living has reared

its head, of course, but living costs are still 17 per cent below the 1929 average, according to the Department of Labor. While prices making up the cost of living have been rising, their increase since 1933, the low year, has been only 14.5 per cent. In that same period, automobile factory payrolls are reported up 281 per cent, being now within reach of 1929 levels, even though wholesale automobile sales in 1937 are 14 per cent lower than 1929 in number of units and 2 per cent lower in dollar volume. The chart is based on a tabulation in which factory payrolls include the entire automobile and parts manufacturing industry. It is to be noted that the indices of cost of living and purchasing power were practically equal in 1929. Because 1937 is incomplete, figures in all cases are for the first six months of each year.



ule was maintained for 139 consecutive days. The glass plant superintendent explains that glass making is a delicate business in which interruptions cause many complications. The necessity for replacing rollers in the machinery finally ended the record-breaking run.

"The fact that we were able to operate without a halt for more than four and one-half months shows both that the complicated machinery was in top condition and that the mix was of uniformly high quality," it was stated. "This uniformity is made possible by constant checks all along the line, but even then you have to have some luck to get off a run like this. More than 86 tons of molten glass (2200 deg. F.) flowed into rollers each day of the run and, although the rollers are water cooled, the terrific heat finally caused them to oxidize slightly. The glass began to stick and the run was over." The glass strip is cooled very slowly after it leaves the machine,

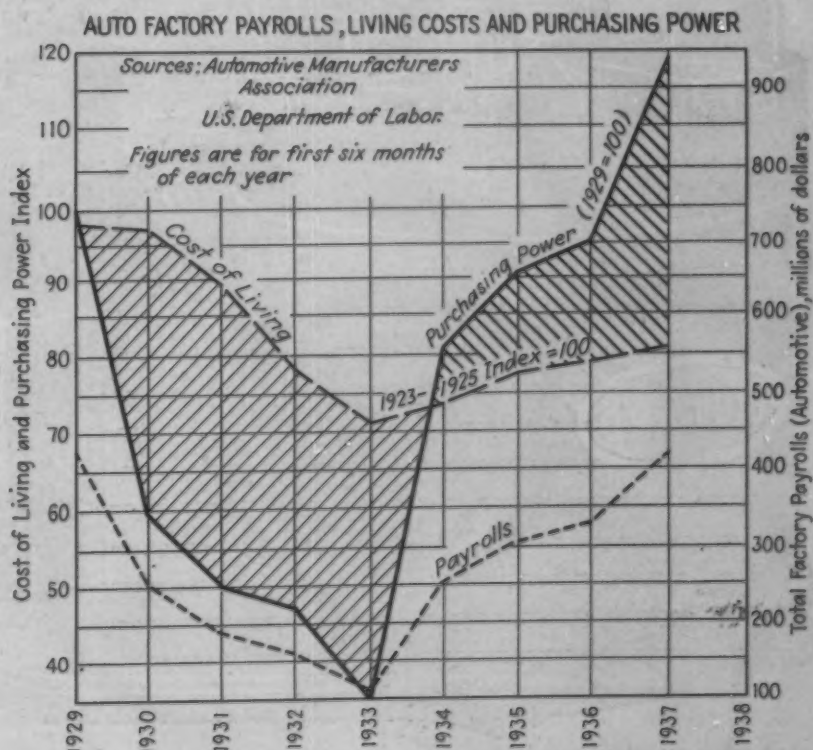
to prevent flaws, and then is cut into convenient lengths for grinding and polishing, after which it is assembled as safety glass.

Considerable ingenuity has been displayed in the design of the new American Bantam cars and trucks to reduce die and assembly cost. Fender die costs have been cut materially by utilizing the same die for front and rear fenders. These dies, incidentally, were made at the Detroit Body Die Corp. Separate floor boards and toe

boards have been eliminated by use of a single steel stamping. Rear shackle brackets on the frame have been displaced by steel tubes pressed through the frame and welded in place. A single frame cross member does double duty as cross member and support for radiator core, hood sill, radiator shell, fenders and headlights. In the engine, it is reported, construction has been simplified by combining the functions of various units. In the plant, receiving bays for materials are adjacent to the

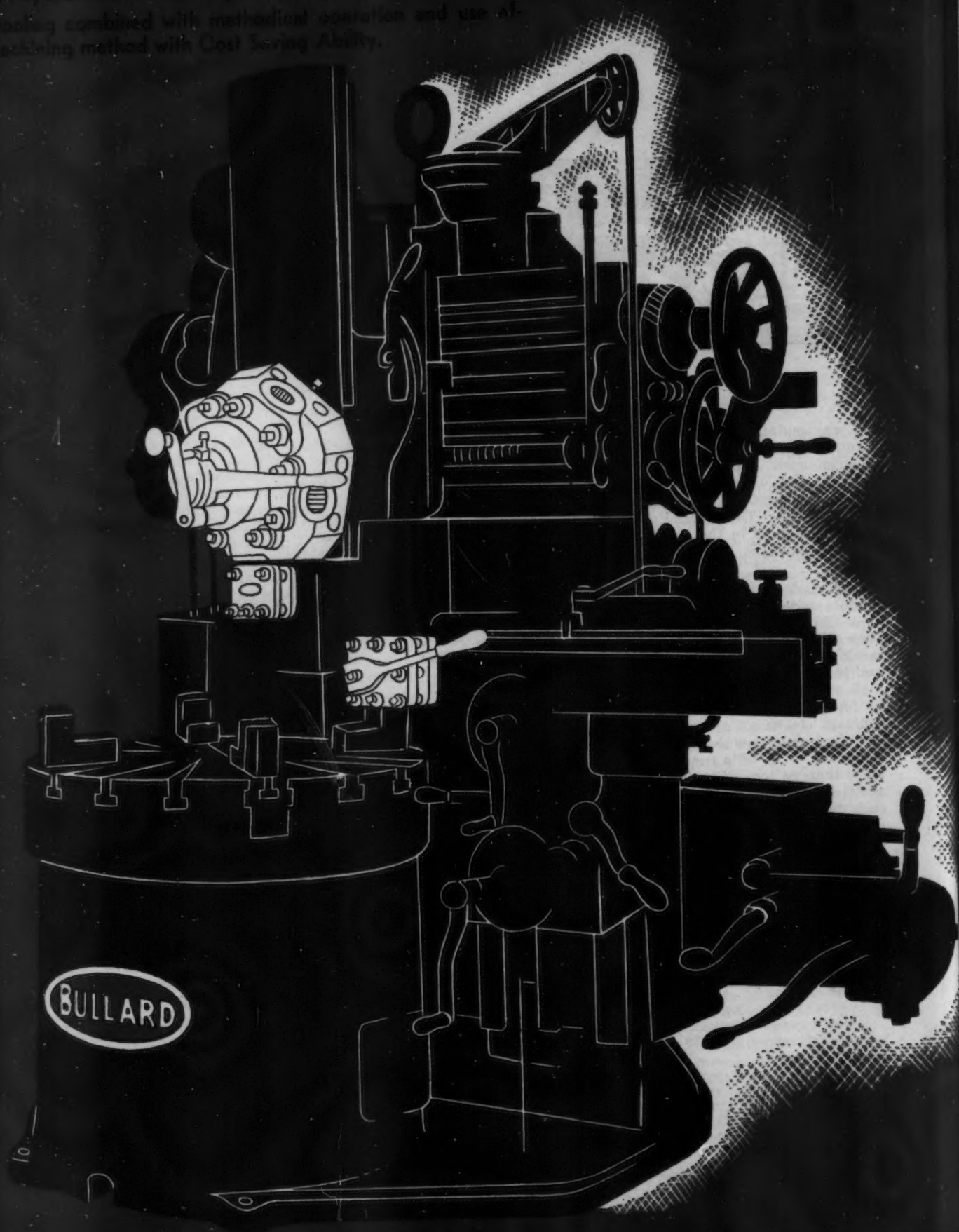
Year	Total Factory Payrolls (000 omitted)	Cost of Living Automotive Cities, *1923-25	Pur- chasing Power, *1929
1929	\$426,834	98.0	100
1930	251,151	97.2	59
1931	191,242	88.2	50
1932	160,668	78.4	47
1933	110,004	71.2	35
1934	260,164	74.1	81
1935	306,385	77.6	91
1936	329,213	79.4	96
1937	422,590	81.5	119

*Equals 100



42", and 54". Two heads, main and side head, cutting simultaneously eliminate much lost time between cuts. The main head turret provides for five sets of tooling, and is quickly indexed for successive operations. The side head accommodates four tool bits and may be quickly indexed to meet requirements.

Multiple tooling combined with methodical operation and use of a machine method with Cost Saving Ability.



THE BULLARD COMPANY
 BRIDGEPORT, CONNECTICUT

line where the first operation is performed on the materials. A highly efficient system of sub-assembly lines has been devised, according to R. S. Evans, president of the Butler, Pa., concern. Sub-assembly units feed directly into sub-assembly line, which in turn feed directly into the main assembly line. He also reports that considerable fixed center machinery has been provided to permit continuous and high-speed operation. The equipment is designed for high efficiency and single purpose tooling, he said.

Canadian Steel Plant to Resume

Depression-closed steel mills at Ojibway, Ont., just a few miles down the river from Detroit, are to reopen Sept. 1 as a result of an investment of nearly \$400,000 by the Ontario government. The Province is going into the steel business just as it has gone into lumber operations, according to Premier Mitchell F. Hepburn. With an indebtedness of \$355,443, the Ojibway mills, built by the Canadian Steel Corp., a subsidiary of U. S. Steel, were abandoned during the depression years. Erected at a cost of \$1,500,000 the mills were operated but a short time. With Provincial welfare costs in Windsor and the vicinity still at a high point, Hepburn said that the government decided to provide funds for opening the plant. Contracts were signed a week ago by the Government and Dominion Steel & Coal Corp., which recently acquired the property from the United States Steel Corp. The Province will profit only indirectly from its investment, the steel company having agreed to hire only workers from the Provincial Employment Service at Windsor. The number of employees will be 570 on Sept. 1, gradually increasing to 1200. Wage scales are to be determined by the Ontario Labor & Industry Board. Hepburn's announcement was made in an address to nearly 10,000 border cities residents at an open-air meeting in Windsor. He said that in the lumber business the government signed 40-year contracts with American mill operators, cutting the \$3-a-cord royalty on pulp wood in half to encourage processing work in Ontario. As a result, the Provincial Department of Lands and Forests erased its operating loss of \$600,000 a year and is realizing a profit of \$4,000,000 this year. From less than 4000 workers in 1935, there are now 25,000 employed in the north lumber country. Next year, he predicted, this government policy will result in the employment of 50,000 men and

the taxes or profits to the government will be more than \$7,000,000. He said that 12 new mills are being built and that expenditures will exceed \$49,000,000.

UAW Split Averted

Whatever the outcome of the UAW's Milwaukee convention, you can credit the Mortimer-Reuther-Hal Unity group with a most astute bit of political reckoning. They wanted control of the union, but not at the expense of a public split. Many thought they were defying the law of gravity when they used the names of Homer Martin and Richard T. Frankenstein to balloon their hopes for the unity ticket. Essentially the situation is this:

Martin, with majorities on every committee, the influence of his office as president, the aid of Frankenstein and the support of many locals, was too powerful a factor to be dismissed lightly. But Martin had lost the support of John L. Lewis and even insulted him during the executive board sessions a few weeks ago. The unity faction was certain that Martin was in the difficult position of having to backtrack and lose face. Under the circumstances, he might even have walked out.

Everyone knew that Lewis planned a harmony speech at the convention and a call to rally 'round in the Ford fight, so they guessed that putting Martin's name on their slate would make it convenient for him to stay in the

fold, even though shorn of much of his former power. Apparently it has not been revealed before, but the situation between Martin and Lewis is characterized by an incident said to have occurred during the executive committee's meetings. Lewis put in an appearance at Milwaukee and Walter Reuther waged an argument with Martin about letting Lewis into the executive sessions. The high point was reached when Martin said "To hell with Lewis"—but the climax came when Lewis was admitted to the sessions. Lewis' domination was most aptly put by Ora Gassaway, Lewis' trouble-shooter, who early in the convention told the assembled delegates that the way to success for the UAW was in following "the advice of the United Mine Workers." He reminded them that the UMW had loaned funds, brains and leadership to get the UAW organization under way.

Automobile Production Declines

Normal seasonal influences sliced another 10 per cent from automotive production figures last week. Ward's Automotive Reports set the total output of cars and trucks in the United States and Canada at 83,310 units. The previous week's output was 93,339, but a year ago at this same time only 59,237 units were assembled. Exactly half of the 28 companies whose production is listed regularly by Ward's were closed during the last week for change-overs to

(CONTINUED ON PAGE 80)



IN operation only a few weeks, the Graham-Bradley tractor assembly line at the Graham-Paige Motor Corp. plant in Detroit is being stepped up to turn out 25 units a day. Original production was scheduled at 10 a day. These tractors use automobile engines and many other automobile parts.

Current Metal Working Activity Statistically Shown

These Data Are Assembled by The Iron Age from Recognized Sources and Are Changed Regularly as More Recent Figures Are Made Available. Boldface Type Indicates Changes This Week

	July 1937	June 1937	July 1936	Seven Months 1936	Seven Months 1937
Raw Materials:					
Lake ore consumption (gross tons)*.....	5,236,487	4,639,733	3,826,050	23,123,350	34,610,446
Coke production (net tons)*.....	4,707,106	4,298,559	3,827,400*	25,113,000*	32,226,934
Pig Iron:					
Pig iron output—monthly (gross tons)*.....	3,498,858	3,107,506	2,594,268	16,122,494	23,205,451
Pig iron output—daily (gross tons)*.....	112,866	103,584	83,686	75,692	109,460
Castings:					
Malleable castings—production (net tons) ^d ...	45,479	54,026	44,413	318,505	397,334
Malleable castings—orders (net tons) ^d	41,353	43,141	41,031	306,086	376,211
Steel castings—production (net tons) ^d		101,239	78,654	420,236	
Steel castings—orders (net tons) ^d		71,817	74,001	497,555	
Steel Ingots:					
Steel ingot production—monthly (gross tons)*.	4,556,596	4,183,762	3,914,370	25,190,467	33,321,229
Steel ingot production—weekly average (gross tons)*.....	1,030,904	975,236	885,604	827,817	1,100,074
Steel ingot production—per cent of capacity*.	78.49	74.46	67.61	63.20	83.75
Finished Steel:					
Trackwork shipments (net tons)*.....	8,252	9,194	6,216	40,808	62,260
Fabricated shape orders (net tons)*.....	160,970	175,552*	199,057*	961,033*	1,079,769
Fabricated shape shipments (net tons)*.....	144,560	147,618*	155,124*	847,368*	924,616
Fabricated plate orders (net tons) ^d		34,833	60,324	289,806	
U. S. Steel Corp'n. shipments (tons) ^b	1,186,752	1,268,550	950,851	5,982,201	8,801,026
Ohio River steel shipments (net tons) ^d	163,705	147,100	110,495	576,116	821,395
Fabricated Products:					
Automobile production, U. S. and Canada ^k	456,775	521,139	451,206	3,045,714	3,374,195
Construction contracts, 37 Eastern States ^l	\$321,602,700	\$317,842,100	\$294,734,500	\$1,532,075,300	\$1,815,253,900
Steel barrel shipments (number) ^d		929,536	752,223	4,597,984	
Steel furniture shipments (dollars) ^d		\$2,183,481	\$1,510,716	\$10,722,134	
Steel boiler orders (sq. ft.) ^d		719,008	1,109,849	5,771,466	
Locomotive orders (number) ^m	3	22	9	131	231
Freight car orders (number) ^m	1,030	528	4,469	31,023	46,120
Machine tool index ⁿ	171.1	191.8	150.1	†132.6	†190.5
Foundry equipment index ⁿ	204.0	228.2	159.6	†155.4	†224.7
Foreign Trade:					
Total iron and steel imports (gross tons) ^p		44,771	47,940	367,085	
Imports of pig iron (gross tons) ^p		7,541	12,496	110,003	
Imports of all rolled steel (gross tons) ^p		24,656	19,638	143,406	
Total iron and steel exports (gross tons) ^p		826,534	296,738	1,928,329	
Exports of all rolled steel (gross tons) ^p		195,676	93,365	626,855	
Exports of finished steel (gross tons) ^p		163,689	83,599	570,913	
Exports of scrap (gross tons) ^p		514,651	192,817	1,243,090	
British Production:					
British pig iron production (gross tons)*.....	729,300	699,300	665,600	4,414,700	4,740,300
British steel ingot production (gross tons)*.....	1,059,200	1,106,400	974,100	6,718,300	7,397,600
Non-Ferrous Metals:					
Lead production (net tons)*.....	45,496	40,156	39,576	263,591	299,630
Lead shipments (net tons)*.....	47,727	42,710	38,996	254,733	360,367
Zinc production (net tons) ^e	49,181	50,526	45,481	299,213	329,771
Zinc shipments (net tons) ^e	49,701	50,219	41,819	294,306	369,165
Deliveries of tin (gross tons) ^v	4,980	6,645	7,120	44,140	49,415
Copper production, refined (net tons) ^w	79,611	86,016	53,985	410,165	567,076

† Three months' average. * Revised.
Source of figures: * Lake Superior Iron Ore Association; ^b Bureau of Mines; ^c THE IRON AGE; ^d Bureau of the Census; ^e American Iron and Steel Institute; ^f American Institute of Steel Construction; ^g United States Steel Corp.; ^h United States Engineer, Pittsburgh; ⁱ When preliminary from Automobile Manufacturers Association—Final figures from Bureau of Census. ^j F. W. Dodge Corp.; ^k Railway Age; ^l National Machine Tool Builders Association; ^m Foundry Equipment Manufacturers Association; ⁿ Department of Commerce; ^o British Iron and Steel Federation; ^p American Bureau of Metal Statistics; ^q American Zinc Institute, Inc.; ^r New York Commodities Exchange; ^s Copper Institute.

Per Cent

175

150

125

100

75

50

25

0

CAPITAL GOODS ACTIVITY

Per Cent

175

150

125

100

75

50

25

0

1933

1934

1935

1936

1937

The Iron Age Weekly Index of Capital Goods Activity

(1925-27 = 100)

Last week	104.3	Same week 1934.....	39.9
Preceding week	104.9	Same week 1933.....	53.4
Same week last month.....	96.4	Same week 1932.....	32.2
Same week 1936.....	87.2	Same week 1931.....	57.0
Same week 1935.....	65.9	Same week 1930.....	83.8
Same week 1929.....	120.1		

ACTIVITY in the production and distribution of durable goods showed a loss of 0.6 points for the week ended Aug. 28, according to THE IRON AGE seasonally adjusted index. Losses in heavy engineering construction awards and in Pittsburgh industrial activity and originating shipments were the major influences affecting the index. The seasonal experience figures for automobile production show that while production is following the general seasonal trend, it is not declining as rapidly, on a week to week basis, as is customary at this time. This fact caused the final adjusted figure for automobile production to rise 1.7 points, in face

of a reduction in the number of units produced. Steel ingot production, unchanged from the preceding week, dropped 0.2 points in the index after seasonal adjustment.

	Latest Week	Change from Preceding Week
Steel production (per cent of capacity)	83.0	0.0
Automobile production (number of cars and trucks).....	83,310	-10,029
Railroad loadings of forest products (number of cars)...	41,346	+414
Pittsburgh industrial production and shipments (index number)	101.9	-3.4
Construction contracts awarded (total value)	\$37,338,000	-\$6,003,000

Components of The Index (1) Steel Ingot Production Rate, from THE IRON AGE; (2) Automobile Production, from Ward's Automotive Reports; (3) Revenue Freight Carloadings of Forest Products, from Association of American Railroads; (4) Industrial Productive Activity in Pittsburgh District, from Bureau of Business Research of University of Pittsburgh; (5) Heavy Construction Contract Awards, from *Engineering News-Record*.

WASHINGTON



... President pulls another Court reform rabbit out of the hat; his real aim still can be only surmised.

.

... Next session of Congress has a good deal of unfinished business to consider; tax reform considered probable.

.

... Sweeping investigation of the steel industry to determine an "effective public policy" may come; basing point bill is slumbering.

By L. W. MOFFETT

Resident Washington Editor
The Iron Age

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WASHINGTON, Aug. 31.—Just when the New Deal harmony boys were reporting progress in applying soothing political salve to deep-cut wounds suffered in the Senate Court packing battle, Mr. Roosevelt nonchalantly pulls another Court reform rabbit out of the Presidential hat.

President Roosevelt affixed his signature to the measure, which was designed innocuously to expedite lower court procedure, called it "a step in the right direction" and gave seven reasons why it falls short of being "even a part" of any "complete and rounded plan" for judicial reform.

Apparently the thing he deplors most about the compromise plan is its lack of Court-packing potentialities. At any rate he listed these reasons, among others, why he considers the bill does not meet the situation: (1) It provides for no flow of new blood to any of the Federal benches; and (2) It does not touch the problem of aged and

infirm judges who fail to take advantage of the opportunity afforded them to retire or resign on full pay.

The White House announcement came as a severe jolt to the country and especially to those in the Senate who had breathed deep sighs of relief when the move to add six new justices to the high bench went down to defeat. Senator King, Democrat, of Utah, said flatly he interpreted the statement as "a continuation of the plan to change the judiciary system" and indicated he would rearm himself next session to fight any scheme that might "impair the efficiency of the judiciary or be an assault on constitutional government."

Country Can Only Surmise as to President's Intentions

Speculation is growing as to what the President has in mind. Has the constitutional amendment bug really bitten him or does he have another more direct and effective method on tap? The country can only surmise. Whatever the plan, Mr. Roosevelt expresses confidence that, like the original Court bill, its objectives are "recognized as desirable by most of our citizens." And there is a growing belief that he may either take to the air or to the stump, or both, to

stimulate interest in his objectives and at the same time throw political cold water on his enemies who wrecked the Court plan.

Debonair Henry F. Ashurst, the consistently inconsistent chairman of the Senate Judiciary Committee, emerged from a White House conference a few hours after the Presidential statement and announced that members of his committee would meet in Washington by Nov. 1 to scan all available information on the subject of the judiciary. Asked about specific proposals to be considered, the Senator's only comment was: "We will not be afraid to touch or avoid any subject."

Senator Ashurst was the President's "good right arm" throughout the Court controversy.

Thus, what was generally regarded as the final chapter of another blundering episode of the New Deal may be, after all, only the beginning. If the Court proposal, or a modified substitute, is going to be dusted off and sent to Capitol Hill in January, a review of other bills introduced during the last session may give a fairly accurate picture of what to expect of the next Congress.

A Steel Investigation?

First, there was the Ellenbogen resolution providing for a sweep-

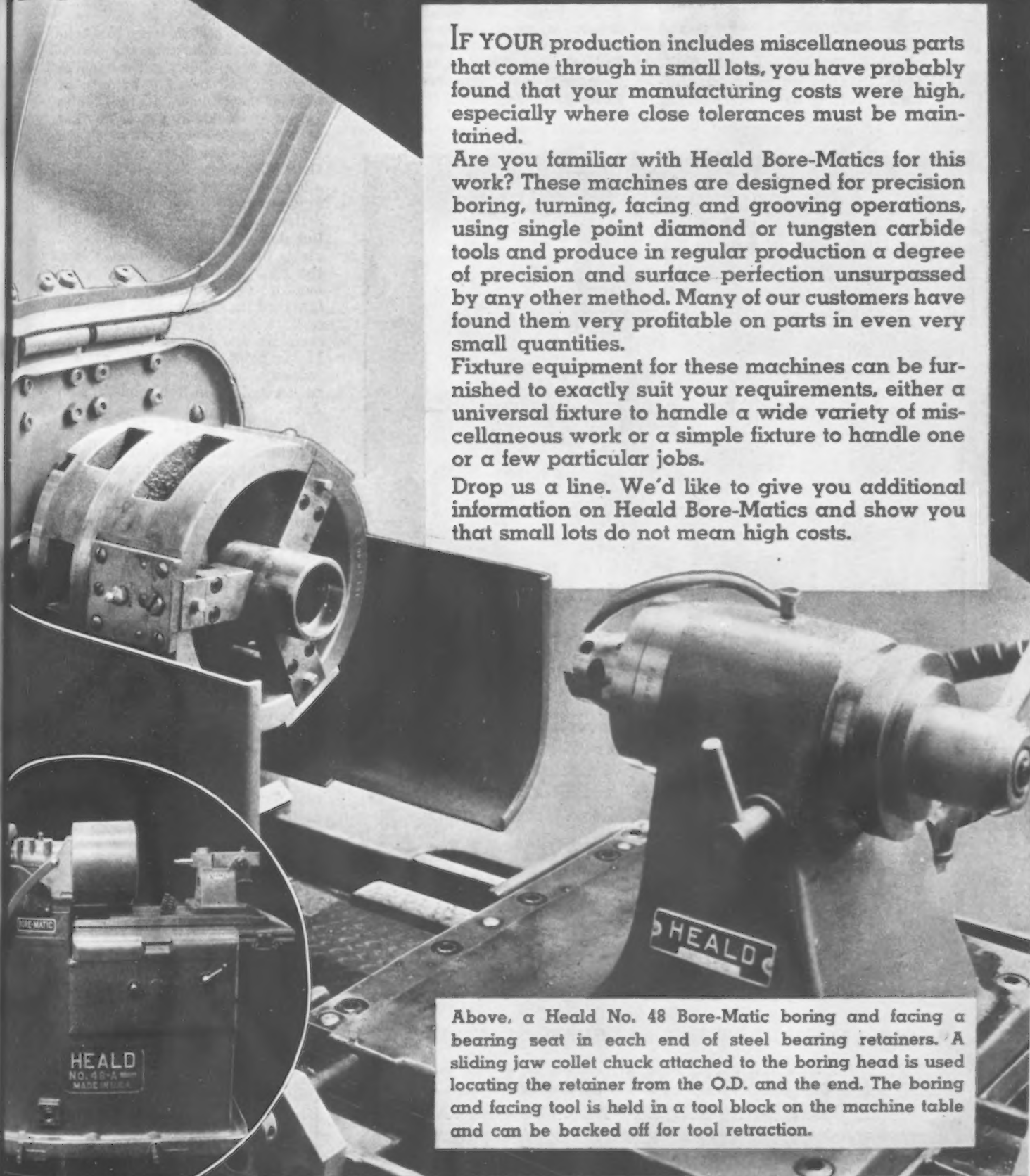
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ing investigation of the steel industry introduced by the Pennsylvanian after the University of Pittsburgh's Bureau of Business Research had recommended that Congress determine "an effective public policy toward the iron and steel industry." Referred to the House Interstate and Foreign Commerce Committee, and later to the Rules Committee, where it was allowed to die, it contemplated a searching inquiry into all phases of the industry including manufacturing, pricing and merchandising

practices, production costs and labor relations.

The University of Pittsburgh report, while condemning the FTC attitude on the basing point system as "inconsistent with the economics of the steel industry and therefore in the long run doomed to futility," criticized the basing point system as developed under the steel code. Briefly, it urged the broad investigation in order to formulate a Federal price policy—a step which ultimately could only have meant Government regulation.

Then, there was the Wheeler anti-basing point bill, which had been introduced successively during the last two sessions and on which hearings were held during the latter part of the 74th Congress. Reflecting the FTC viewpoint, the bill would jettison the basing point system and encourage an f.o.b. mill pricing scheme.

Senator Wheeler, busy throughout the session battling the Court-packing plan, didn't get around to press his bill possibly because he needed the support of the White House and couldn't get it in view of his belligerency toward the President's Court proposal. The U. S. Chamber of Commerce and others protested vigorously against any attempt to ban selling at delivered prices and the bill still lies dormant in the Senate Interstate Commerce Committee; but the FTC pounced on the Wheeler measure as a go-ahead signal and launched its Birmingham plus case against the Cast Iron Soil Pipe Association and against the multiple basing point system of the cement industry, charging price discrimination under the Robinson-Patman Act.

Reciprocal Sales

Representative Wright Patman, of Texas, co-author of the law, threw into the Congressional hopper early in the session a measure outlawing reciprocal sales, a widely accepted practice mutually among both buyers and sellers of iron and steel products. In his opinion reciprocal selling tended toward monopoly, reduced competition and is used as a club "to force or intimidate buyers." Hearings were started but interest was so slight that the bill has long since been forgotten.

Then there was the Lea amendment to the Federal Trade Commission Act which would broaden FTC "snooping" powers over unfair methods of competition by extending its jurisdiction to cover "deceptive practices." Such an amendment, which has been urged for some time by the commission, was reported favorably by the House Interstate Commerce Committee in the closing hours of the last session. The National Association of Manufacturers had termed the amendment unnecessary and said it would create confusion and hardship and raise serious legal and constitutional questions.

Wage and Hour Law

New Deal agitation for a wage and hour law got off to an early start when Senator O'Mahoney, Democrat of Wyoming, proposed Federal licensing of corporations. The measure went through the

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hearing stage but got no further. Major George L. Berry, then the President's "Industrial Coordinator," made several overtures to the White House concerning labor legislation, and Representative Howard W. Smith, Democrat of Virginia, drafted a bill for wage and hour regulation by State law with Federal policing of interstate shipments to protect State standards. But the Administration had its eye on the two New Deal messiahs, Corcoran and Cohen, who were burning the midnight oil turning out a bill which the President and his Capitol Hill lieutenants subsequently swallowed hook, line and sinker.

Upon reaching the Capitol, it became known as the Black-Connery bill and probably came closer to passing than did any other bill on the calendar. Blocked by the unprecedented action of an otherwise obscure Rules Committee, after running the gauntlet in committees of both Houses, the bill had a stony course. Opposition from the South, labor's apparent indifference and industry's apprehension that it contained subtle implications beyond merely placing a floor under wages and a ceiling over hours were factors contributing to its failure.

But despite these objections, the feeling prevails that the bill, or a similar one, will be whipped through next session. Assistant Attorney General Robert H. Jackson, the Administration's ace monopoly baiter, forecasts that it will be easily passed early next session. Some Congressional lieutenants predict it may pass if a special session is called in November.

Broadening of the Walsh-Healey Government Contracts Law was proposed at various times during the session. Its sponsors, Senator Walsh and Representative Healey, both of Massachusetts, tried lowering the \$10,000 stipulation so that holders of contracts amounting to \$2,500 and over would be required to abide by its Labor standards. Subsequently, Madam Perkins was successful in having the House Labor Committee insert a \$2,000 minimum as an amendment to the wage and hour bill. Instead of yielding to requests for relaxation of the law in her quarrel with steel manufacturers, she had urged the provisions be made even more stringent and the Madam jumped at the chance of tightening the reins when the wage bill came along.

But William Green, AFL president, urged the committee to drop the amendment. Green's action was surprising in view of his ardent advocacy of the Walsh-Healey bill, but the opinion has

been advanced that the law never came up to labor's expectations.

The rising prices of scrap and the unprecedented upswing of exports came in for its share of attention and resulted in no less than half a dozen bills to curb scrap exports in one way or another. The Schwellenbach bill to license scrap iron and steel was a long time getting to the hearing stage and during the interim other bills were introduced and later broadened to include iron ore, pig iron and finished steel. There was even the

comprehensive survey contemplated by the Bridges-Berry resolution covering "natural resources of iron ore and the domestic supplies of iron and steel scrap necessary for domestic use." Such an investigation, its sponsors insisted, was the necessary forerunner of any scrap legislation.

The scrap hearings finally were scheduled but lasted only a few hours after representatives of both the scrap interests and the independent steel companies agreed on

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an extension of time. Latest reports are that both sides are working on an agreement among themselves which would circumvent further Congressional action on the subject, although hearings are slated to be resumed when Congress reconvenes.

The Vandenberg bill, aimed at solving an intolerable labor relations situation, was timely, but it stood little chance of passing in view of its Republican sponsorship and because the New Dealers thought the existing law was par excellence. Under the Vandenberg proposal, employers would share the right to demand collective bargaining elections and employees would be required to adhere to a

"fair trade practice code." Compulsory political assessments would be banned, union officials would have to be U. S. citizens, and threats, coercion and physical violence as a means of increasing union membership would be outlawed. Personal property destruction also would be listed as an unfair labor practice and violators made subject to the penalty provision of the law.

Aimed particularly at the CIO and its counterpart, the SWOC, when public resentment against the Lewis tactics was reaching a new high, the bill nevertheless did not get far. The Michigan Senator attempted to attach his bill to the wage and hour measure and for a

time it appeared to be a good move but he later abandoned the effort, perhaps because he doubted the Black-Connery bill itself would pass.

Described as a way by which "legalized collective bargaining may hope to produce more effective industrial peace," the bill will undoubtedly fare much better next session. There is a definite feeling even in Democratic circles that a more equitable labor relations law is needed badly. And developments since the Vandenberg measure was drafted point to the necessity of curbing CIO's utter irresponsibility and of rectifying the Labor Board's CIO bias.

Tax Legislation

Prompted by the popular clamor for elimination of the undistributed profits tax provision of the 1936 Revenue Act, Representative Emanuel Celler, Democrat, of New York, sponsored an amendment to the tax bill that never received much attention, partly because of Administration statements that general tax legislation would not be given consideration until next session and partly because the Celler draft was considered by some as giving too liberal treatment to the subject. For example, in allowing credits to corporations for amounts paid out during the taxable year for improvements, and plant expansion, the Celler draft was considered in some quarters as an invitation to build up facilities beyond the point warranted by demand. It was said that to that extent it might be dangerously inflationary.

The U. S. Chamber of Commerce, in urging changes in the undistributed profits tax, suggested, among other things, that credits be allowed for improvements, but said such expansion moves should be limited to a reasonable number.

More recently the National Association of Manufacturers laid before Treasury experts a survey based on letters from manufacturers who had described their experiences with the tax. Many of them indicated the probability of increased employment if the law should be lifted. The association has consistently opposed the tax, which imposes a heavy tax penalty on net income of business not distributed as dividends, and describes the tax as "a potential deterrent to recovery."

The association's opposition was based on the belief that the measure would forestall machinery replacement and plant expansion, both needed as the result of long years of obsolescence and retrenchment during the depression. It was also

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opposed because of the special burden imposed on small and medium sized companies which lack working capital.

There is every indication the tax structure will be modified at the next session of Congress with a change in the undistributed profits tax or outright repeal due. The Treasury Department is making a thorough canvass of the subject with a view toward laying definite recommendations before the legislators in January.

Such prominent administration advisers as Jesse H. Jones, RFC chairman, and Joseph P. Kennedy, former SEC chairman and now head of the Maritime Commission, have expressed themselves as favoring modification of the tax law.

McGrady Goes to RCC In Labor Relations

WASHINGTON, Aug. 31.—Edward F. McGrady, the Administration's ace trouble-shooter in strike controversies and a member of the ill-fated Steel Mediation Board, is leaving his \$9000-a-year post as Assistant Secretary of Labor to go with RCA as labor relations man.

McGrady, who has served in his present job for the last four years, has been on hand for almost every major strike crisis during that time. Many were hopeful he would be the next Secretary of Labor.

General Hugh S. Johnson, under whom McGrady worked as labor adviser in the NRA, is understood to have been instrumental in lining him up for the new job. It is reported he will receive a handsome salary. Johnson himself received \$50,000 for two months of work as labor relations adviser for the company during a prolonged strike in its Camden, N. J. plant a few years ago.

McGrady has not always been successful in bringing about strike settlements but in instances where he failed it has been generally agreed that few people could have done better. His vacancy in the Labor Department will be a hard one to fill.

Mentioned as possible successors are John Steelman, former Alabama college professor, at present chief of the Labor Department's conciliation service, and James Dewey, of Pennsylvania, an assistant of McGrady's during the recent steel troubles. Others likely to receive consideration for the job are

Robert Watt, Massachusetts labor leader who has represented this country in Geneva; George Harrison, president of the Railroad Clerks Union; and E. R. Oliver, acting head of Labor's Non-Partisan League.

The latter, however, is understood to be definitely out of question since his present job with the Labor League would disqualify him as an impartial applicant because of its indirect affiliation with the CIO.

Joseph P. Kennedy Condemns "Sit-Down"

WASHINGTON, Aug. 31.—Joseph P. Kennedy, chairman of the Maritime Commission, has gone on record as condemning "sit-down" strikes as a "definite menace to the continued existence of the American merchant marine" but has refused to take sides in the

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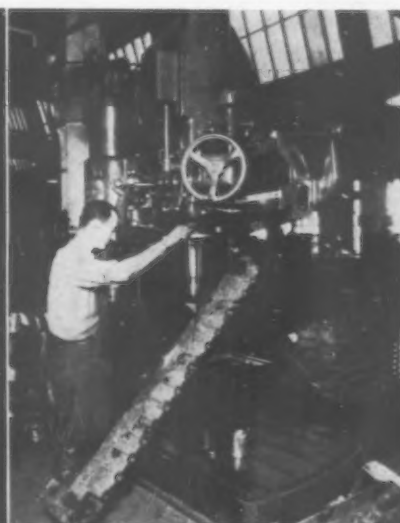
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AFofL-CIO labor controversy in the maritime industries.

In response to a letter from William Green, AFofL president, Kennedy said "the commission is neutral and will remain neutral. It is the intention of the commission to deal with maritime labor as a whole and without distinction between whatever factions may exist. Consequently we cannot espouse the cause of your faction as you demand."

Green had written asking the

commission, in effect, to openly denounce the CIO, although he did not mention the competitive labor group by name. He charged that the commission was "in a measure" responsible for the "development of destructive factionalism" because it recognized no difference between factions; the faction "that has no regard for solemn agreements and the faction that honors agreements; between those who advocate and practice sit-down strikes and the other who firmly oppose such

methods of labor warfare in the maritime industry."

Kennedy visited the White House before writing the letter to Green but there was no intimation of what had been discussed.

Navy to Build Two Auxiliary Ships

WASHINGTON, Aug. 31.—The Navy Department on Friday inaugurated its long-range program for construction of naval auxiliary vessels by announcing that bids will be open on Nov. 17 for construction of two auxiliary ships.

One is to be a destroyer tender of about 8300 tons, the other an airplane tender of approximately 9000 tons. Under the terms of the Third Deficiency Act, one of the ships will be constructed in a private yard and one in a Government navy yard.

The program for building auxiliary vessels is regarded as one of the paramount needs of the fleet.

U. S. Steel Products Still in Shanghai

THE Shanghai office of the United States Steel Products Co., export subsidiary of the United States Steel Corp., has not been closed, as has been reported. W. H. Plant, the manager, remains there and the New York headquarters at 30 Church Street is receiving daily cablegrams from him. Some of the employees of the Shanghai office and their families have been evacuated to Manila or other Far Eastern cities, but none have gone to Hong Kong, nor has an office been opened in the latter city by the steel export company, it is stated.

Wall Chart of S.A.E. Color Code

A 22 x 36-in. wall chart of the standard color code for the identification of S.A.E. steels, as approved by the National Association of Purchasing Agents and the National Bureau of Standards, is now being distributed by Mill Service, of Springfield, Ohio. This chart simplifies and accelerates the correct marking and, also, the correct identification of 79 different grades of S.A.E. steels. Nine blank spaces are provided on the chart for subsequent painting to effect other additions or changes that might be necessary or convenient in the color code.

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Mediation Averts Railroad Strike; Washington Expects a Settlement

WASHINGTON, Aug. 31.—The National Mediation Board, in an effort to prevent a strike of 350,000 railroad workers on 86 of the country's principal trunk lines, intervened on Thursday asking union leaders and carriers in Chicago to accept its services in view of "the national importance of the question in dispute." The board sent the following telegram:

"This will acknowledge receipt of your respective communications stating that your conferences have ended in disagreement.

"In view of the national importance of the questions in dispute and in view of the desirability that a matter of such national importance shall follow completely the orderly processes of the Railway Labor Act, the National Mediation Board hereby proffers its services in the premises under Section 5 of the Railway Labor Act.

"The board trusts that this will be acceptable and has designated Dr. William M. Leiserson to begin mediation in Chicago Saturday morning, Aug. 28. Please wire if this is agreeable."

Acceptance of the offer was made by telegrams from representatives of the carriers, and the five railroad brotherhoods which are demanding a 20 per cent wage increase. Dr. Leiserson, board member, left for Chicago Friday night.

In the event mediation efforts fail, it was indicated in Washington that President Roosevelt would be asked to intervene and name a fact-finding commission as provided in the Railway Labor Act. A decision from the commission would be due in 30 days after which another 30 days would elapse before either side could take further action. Thus, naming of a commission would forestall the possibility of a strike for at least 60 days.

Before dispatching the telegram offering its mediation services, the National Mediation Board met in a lengthy session. It was the second time in a little over a month that the board had taken action in a railway labor dispute. The board intervened last month in a dispute involving some 850,000 non-operating employees who demanded a 20c.-an-hour increase. Final settlement, however, gave the work-

ers a 5c. increase which the railroads estimated would cost them \$98,000,000 a year.

Board members say the present mediation efforts may bring about a similar settlement.

Present wage demands would cost the railroads another \$116,-

000,000 a year, the carriers estimate. In opposing any increase, they point out that wage rates are higher than in 1920, purchasing power is greater than in 1929, increased competition is reducing railroad revenue and that many lines reported a deficit for 1936.

The workers contend that their pay does not compare favorably with rates prevailing in other industries, that living costs are soaring, and that they cannot be held responsible for the financial condition of the carriers.



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Labor Board Cites Bethlehem Steel; Hearing Sept. 8 on SWOC Complaint

WASHINGTON, Aug. 31.—Alleging company domination of employee organizations in 14 plants and charging workers were denied their collective bargaining rights in three plants, the National Labor Relations Board notified the Bethlehem Steel

Co. on Saturday that a hearing has been called for Sept. 8 at Franklin Boro, Pa., a community near Bethlehem's Johnstown plant.

Action of the board complies in every particular with an SWOC request and follows "many weeks of field investigation." The CIO steel

union first alleged employee organization domination and financial assistance but later supplemented its petition by charging the company "had used spies, interfered with peaceful picketing, intimidated employees by the maintenance of an arsenal, and had acted in collusion with Mayor Daniel Shields of Johnstown" during the strike which started in June.

For the sake of convenience, a SWOC petition asking an election be conducted to determine if it represents a majority of the company's 55,000 workers also will be a subject for hearing consideration, according to the announcement.

The 14 plants listed in the complaint are located at Johnstown, Bethlehem, Steelton, Lebanon, Rankin and Leetsdale in Pennsylvania; Blasdell and Lackawanna in New York; Sparrows Point in Maryland; Seattle, Washington, and South San Francisco, Oakland, Vernon and Los Angeles in California.

The unfair labor practice inquiry is to be confined to the Johnstown, Bethlehem and Sparrows Point plants. The specific charges are that the company "has threatened to discharge employees for joining the union and that in many instances it has discharged, demoted and otherwise discriminated against union workers." Other allegations listed include "the use of spies," "the maintenance of arms in the plants" and the "hiring of guards" to "coerce workers."

At the offices of the board, where life is just one CIO complaint after another, it was announced that one paragraph of the complaint covers the June strike in Johnstown. It attacks the "back-to-work" movement, assails the "publicized opposition to the SWOC," charges the streets of Johnstown were patrolled by "armed men" who interfered with "peaceful picketing," and says union members were "brutally attacked and beaten." Other charges are phrased in the typical NLRB vernacular.

National Bearing Metals Corp. has announced the opening of a new bronze foundry located in the Clearing district of Chicago. This plant is equipped to manufacture steel mill bearings, bushings, sticks and all types of miscellaneous bronze castings. The new plant, known as the Clearing division, is under the direction of William E. Cartwright, vice-president. William W. Murray has been appointed manager. Sales are in charge of H. A. White, sales manager, Pittsburgh district.



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New Type of Welded Construction Utilized in Cleveland Plant Addition

IN the construction of an addition to its plant in Cleveland, the Lincoln Electric Co. has employed a new type of welded design which utilizes "tree-form" columns recently developed by the Austin Co., Cleveland. The building, two stories high and containing 200,000 sq. ft. of floor space, is of the rigid frame, saw tooth type. Through the elimination of all cross members and trusses, the building attains 100 per cent availability of floor space from floor to roof.

The welded "tree-form" sections were designed for welded construction. It is stated that the cost of using them in any other type of fabrication would be prohibitive. The sections are entirely plate fabricated by arc welding. The components, cut and rolled to proper size and shape, are placed in jigs, clamped, tack welded, then finish welded to standard H-beams in the shop. They provide the main and stud columns of the building.

The saw tooth section, with aisles ranging from 240 ft. to 442 ft. in length, is the first in which such extensive areas have been opened up for free flowing production through every cubic foot from floor to rafters. It occupies the largest portion of the second floor.

The same rigid frame construction characterizes a lofty bay, 240 ft. long, 80 ft. wide and 39 ft. high, also situated on the second floor. "Tree-form" columns, each weighing two tons, support simple 65 ft. welded rafters which completely span this bay. These rafters, welded to the columns, support a cement tile roof.

As an example of the speed that was attained in erection, 93 tons was put in place in one 8-hr. day. Erection was begun on July 7 and about 1300 tons was in place by Aug. 2. The erecting job was facilitated by the accuracy of shop fabrication. Shop welded members, consisting of columns, 65-ft. rafters, intermediate rafters, floor beams, girders, lattice frames, roof purlins, etc., lined up perfectly for the temporary bolted field connections.

The Lincoln Electric Co. states that erection and welding costs were substantially lower per ton of steel than for previously welded buildings. This was due to efficient design and experience gained in erecting structural steel by welding. A total of 29,600 lin. ft. of welding using over 5½ tons of welding electrode was required. Of

this welding footage, 25,000 ft. was for shop fabrication and 4600 ft. for erection. All of the welding was by the shielded arc process with heavily coated electrodes.

The success attained in this project is deemed to be of particular importance at this time in view of

the recognition being given to welded structures in municipal building codes, as for example the new code in New York City which permits use of welding in building construction for the first time.

Webster Mfg. Co., formerly of Chicago and now at Tiffin, Ohio, is undergoing reorganization under section 77B of the Bankruptcy Act. Kenneth A. Waterfield is trustee. The company manufactures conveying and elevating machinery.



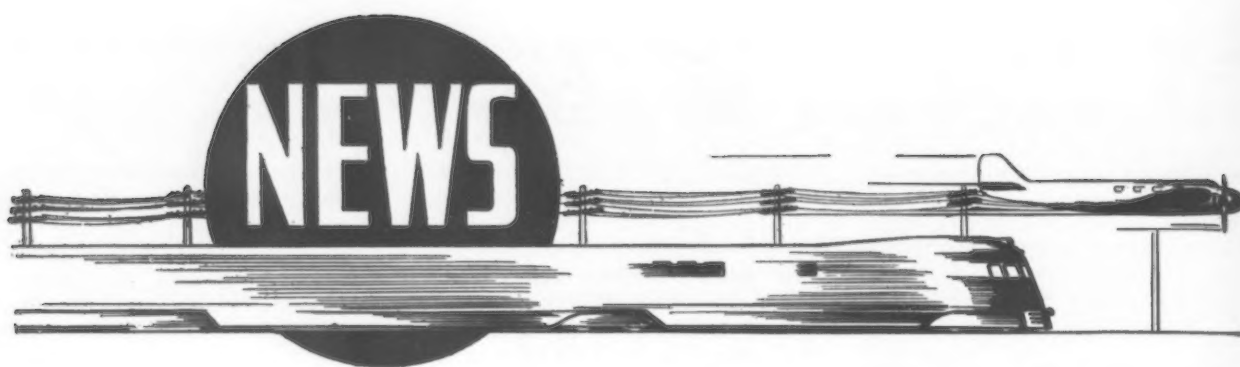
Boulder Dam is built in the canyon of the Colorado River. It is 727 feet high, 650 feet thick at the base and 45 feet thick at the top. The lake formed will cover about 226 sq. miles.

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Problems of Collective Bargaining Keynote at Silver Bay Conference

IN an easy going and friendly atmosphere, enhanced by the calmness of the mountains and the beauty of the lake, 450 representatives of labor, management, Government and education met last week at Silver Bay on Lake George, N. Y., to discuss ways and means of promoting constructive relations in industry. The occasion was the twentieth annual Conference on Industrial Relations held under the auspices of the Industrial Department of the National Council of Y. M. C. A.'s.

To this conference came the more liberal minded executives who, instead of throwing up their hands in despair at the rapid rise of unionism in the last year and the Government backing given organized labor, sought to analyze present trends and to see what initiative they might take to guide our industrial destiny along safe lines. Many speakers were outspoken in defending the present trade union movement and the personalities be-

hind it, although in this regard most agreed that the leaders had merely seized the opportunity; the basic urge of self-expression on the part of labor was there and would have found an outlet without the Lewises and the Greens. Collective bargaining, the conference agreed, was here to stay, though none had a satisfactory definition to supply for it, with the exception of the Caterpillar Tractor Co., Peoria, Ill., which has made a novel approach to the whole subject.

Broad Social Viewpoint Expressed

In general, the approach to all the problems offered the conferees was a philosophic one, with most speakers expressing a broad social viewpoint in terms of national prosperity and mass purchasing power, rather than dealing with everyday problems facing personnel departments. Companies with advanced labor policies were largely represented, and it was interesting to note that few of them viewed the present situation with alarm, but

rather subjected their colleagues to a lot of good natured "kidding" about their new adventures in dealing with organized labor for the first time, in many instances. To this extent, the field had been reversed since the conference held a year ago, because the validity of the National Labor Relations Act had been upheld by the Supreme Court in the meantime. Unionization and collective bargaining are here—what are we going to do about them?—was the attitude of the conference.

Roy V. Wright, editor of *Railway Age* and vice-president of the Simmons-Boardman Publishing Co., was chairman of the conference committee.

The keynote of the conference was presented at the opening meeting on Aug. 25 by Dr. J. Douglas Brown, professor of economics at Princeton University, who reviewed some of the new social and economic conditions that must be faced in developing a sound industrial relations policy. The broad surface conditions he named as (1) rapid resumption of business following a major depression; (2) rapid extension of state and Federal regulation of business; (3) rapid growth of industrial production

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areas; and (4) the greater interest of Government in the welfare of the employee and the consumer. Underlying conditions often overlooked, he pointed out as being (1) increasing industrialization and urbanization with the growth of large scale industrial undertakings; (2) increasing education to millions of youth; (3) rising average age of workers, particularly in the large corporations and in the utilities; (4) rapid technological change as a result of the flood of ideas held in check from development during the depression; and finally the tense international situation with its nationalistic stress and strain.

Getting down to practical affairs, Doctor Brown emphasized his belief that the determination of industrial relation policies under these changed conditions was no longer the sole prerogative of management, nor could it be that of Government, nor organized labor; such policies must be developed on a three-fold basis. Many industrialists have thrown up their hands in disgust, whereas he believes there is still plenty of opportunity for management initiative. Neither Government nor trade unions want to or can "run the business."

Insecurity the Basis of Unrest

Doctor Brown believes most of our industrial strife can be traced to one fundamental cause—a feeling of insecurity. Insecurity has developed largely from drawing people from rural areas, where self-sufficiency is the keynote, to urban areas where the dollar is the test of all satisfaction and where a man loses his status as an individual. "Security is the basic urge," said Doctor Brown, "but out of security comes incentive. Security breeds more security and hence incentive and dollars in the pockets of all concerned." Increasing education has created ambition for a fuller life and the incentive to want more things, at the same time creating a desire for increased participation and interest in the formation of industrial policies. Incidentally, the trade union's best argument is security against arbitrary discharge.

To increase security has come old age, life and disability protection, mostly under Government auspices, but industry, says Doctor Brown, has overlooked sickness protection, and more adequate provision will have to be made for dismissal compensation when schedules are faltering. Savings plans are a form of protection, and the rapid growth of credit unions is proof that American workers need a balance wheel between income and spending in meeting everyday



ROY V. WRIGHT, editor of *Railway Age*, was chairman of the Silver Bay conference.

emergencies. Employers can also do well in assisting employees in home ownership.

In establishing a feeling of security as a further means of developing incentive among workers, Doctor Brown recommended that well established personnel practices be not overlooked, such as an effective selection and placement program, effective wage and salary administration, establishment of confidence in reward according to skill, a sustaining rating and promotion plan, intelligent training program and the development of men through proper supervision.

Sees Value in Strong Unions

Frank Rising, labor editor of *Business Week*, saw as the main ob-



JAMES W. HOOK, president of Geometric Tool Co., New Haven, Conn., advocated amendment of Wagner Act.

jective of industry the expansion and protection of mass purchasing power and that it will take the cooperation of labor and industry to achieve it. Reviewing some of the heavy cuts and layoffs that accelerated the depression and drove it to greater depths, he predicted that trade unions and their collective bargaining power will prevent unreasonable layoffs and cuts in future depressions. He sees real value in strong unions that can guide and lead the workers along constructive lines. He feels that there is not a great deal of fundamental difference between the CIO and the AFL, that both are equipped to serve the cause of labor and that both represent movements which are socio-economic in foundation. There are no craft jealousies present in craft unions today, he believes. Leadership in both groups is able and conscientious. There are plenty of "pinks" in the labor movement, just as there are plenty of "punks" in business, and there is evidence of coercion and unfair tactics on both sides. Mr. Rising is optimistic, however, about the spread of reason, particularly after both groups have been educated as to their new relationships.

A great deal of discussion centered on the question of the right to work. It is Mr. Rising's thesis that this is not a matter of individual choice; a man has not the right to work under conditions that are harmful to the purchasing power of others. To this extent he thinks outside agitators sometimes have a place in stirring up satisfied workers as to their influence upon competition within their own industry and upon their purchasing command over the output of other industries.

A pro-union attitude was also expressed by Adam Wilkinson, labor commissioner, American Writing Paper Co., Holyoke, Mass., which has successfully dealt with organized labor for many years. He believes that wage earners, if given freedom of choice, will associate themselves with the trade union movement, but they have not had the opportunity heretofore. Labor now has not only the support of a friendly Government, but also new laws that have been created to help the union movement. Regardless of the political party in power, no future legislature will change those laws, it was his opinion.

Cooperation Springs From Trust

Whether to fight or to cooperate with organized labor is industry's choice. Mr. Wilkinson feels it is to be the advantage of each if cooperation can be undertaken. But, he pointed out, a firm cannot expect

to obtain a cooperative attitude on the part of workers if it is secretly spending money for industrial spies. Suppressive measures naturally lead to trouble, and it is impossible to make an agreement with labor in an atmosphere of distrust. Proper relations can be established if the will and the spirit are there.

The speaker admitted the unions' need for capable leaders, and added that management cooperation would tend to develop these. Especially in the new unions is education needed. Cries of radicalism in labor organizations do not alarm Mr. Wilkinson, because he believes there is less today than there was 25 years ago. Almost invariably labor trouble has occurred in industries that have not heretofore been organized. There are charges of irresponsibility, but if a trade union establishes an agreement it automatically increases its own responsibility, if it is to continue to function. But come what may, Mr. Wilkinson believes that collective bargaining with trade unions will be the predominant way of settling labor disputes. On the other hand, he predicted amendments to the National Labor Relations Act requiring the registration of unions and restrictions on labor activity.

Amend Wagner Act

James W. Hook, president of the New England Council and also of the Geometric Tool Co., of New Haven, Conn., agreed in this particular, that industry should demand amendment of the Wagner Act to make real bargaining possible. "Labor should be brought to see that passive acceptance by employers of a one-sided law does not make for peace, but for industrial war," Mr. Hook declared. "It should join with employers in the effort to make the act a real start toward a fair and equitable national labor policy by defining unfair bargaining practices and making both sides responsible under the law."

Making a plea for restoration of confidence between employers and employees, the former member of the Industrial Advisory Board of the NRA said: "Force never made for happy human relationships and never will. This applies to employers who use strikebreakers and spies as well as to labor groups who employ hoodlum gangs to force demands on employers or drive fellow workmen to accept union memberships against their will."

Representatives of management and labor, Mr. Hook said, should come together in a spirit of mutual confidence and discuss each other's problems "from the viewpoint of what the company, which both sides

have a paramount interest to keep operating efficiently and profitably, can afford to do."

Each Side Signs Promises

Employers should sign promises to employees in matters of hours, wages and working conditions and employee delegates should do likewise, he maintained. After ratification, both documents should be posted and should "commit and honor-bind" both parties.

Industry should go farther, Mr. Hook said, in sharing with workers and consumers benefits from improved techniques and, cooperating with schools, should assume more responsibility and leadership in vocational training.

Industrial leadership, he recommended, should support principles of old-age aid and separation bonus. It should resist the current wage and hour proposals, which "might easily be expanded to set up a vast political super-management over business," Mr. Hook declared.

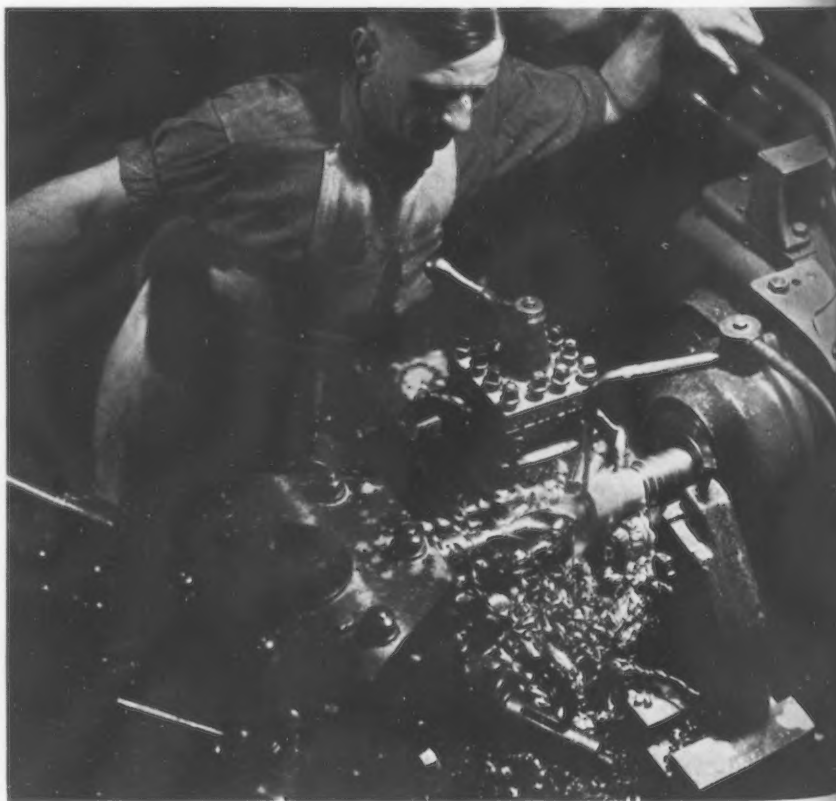
Some actual experiences in collective bargaining under the new law were presented in a paper prepared by B. C. Heacock, president

of the Caterpillar Tractor Co., and read by L. B. Neumiller, director of industrial relations of Caterpillar. Since the National Labor Relations Act itself does not define collective bargaining, the company has placed its own interpretation on it, considering the term to mean "that there shall be discussions between representatives of management and agents appointed by employees for the sincere and honest purpose of discussing any subject concerning wages, hours or working conditions with an earnest desire to reach a meeting of minds, if possible." The company has proceeded on the further premise that until any one agent can show a majority of proxies, all agencies ought to be called into every conference.

Open Bargaining Conferences

Furthermore, the company has adopted the policy of making these bargaining conferences open meetings, with members of the press present and a court stenographer, making available to all the following day a complete transcription of the discussions—literally "a gold fish bowl with loud speaker attached." Through this procedure an agreement has been reached with

Would You Mind..



one AFL affiliate in the presence of delegates of a CIO group and an independent union. All three groups have agreed to accept the labor creed of the company developed many years ago and continuously applied since then. Since the original agreement was reached, the CIO shop stewards have brought up a number of cases of what they considered wage inequalities. Upon analysis, half the cases were found to be in the course of study and half were found not entitled to any wage increase.

Mr. Heacock enjoined his audience to obey the National Labor Relations Act, not trying to find loopholes for evasion as long as it is the law. To do otherwise would be an act of lawlessness; it would set a bad example. Mr. Heacock feels, however, that the American people will not allow such a bad law to remain on the statutes forever. He considers this law bad because it tends to give an organized minority the power to force its desires upon what is presumed to be an opposing minority group, while the truth is that the law gives this minority a chance to take unfair advantage of the public at large,

which is in no position to protect itself. After all, industry like Government, operates on the money of others; customers' money flows through the static pool of stockholders money and makes the wheels turn. The public pays the wages; industry distributes them, and industry must account to society for its stewardship. For this reason a better public relations policy is desirable.

Industry's Relation to the Community

This theme of public relations was expanded upon by Glenn Gardiner of the Forstmann Woolen Co., Passaic, N. J., who gave a number of reasons why an industrial enterprise should cultivate a favorable community opinion, among them being the desire to present the employer's viewpoint in the case of labor trouble; in the interest of equitable taxation, so that an industry may not be taxed out of town; in the interest of recruiting the most desirable types of labor; and in order to sell the company's product.

A company cannot attempt to sell itself to the community unless

its house is in order. A company's reputation depends largely upon its labor policy. Its wages and hours must compare with the best, the working environment should be a place of satisfaction, an active safety program should be in effect, and the hiring of employees should be carefully scrutinized, especially the treatment of applicants for whom there is no work. The foreman is also a part of the inside program of public relations and he should be acquainted with the facts to disseminate to workers.

Executives should play some part in civic affairs if a company is to receive a favorable impression from its local community, Mr. Gardiner suggested. Besides, social minded interests make him a better man on the job. Civic forums provide a means of putting various viewpoints before the community and should be encouraged. Other ways of telling the company's story is by exhibits, lectures on the radio, motion pictures depicting working conditions in the plant, open house visits for members of workers' families, circulation of factory papers outside the factory, dissemination of factual data for articles on the industry in the local press. Employees should be encouraged to participate in civic affairs and employees should be trained that come into contact with the public. There should also be proper contact between industrial leaders and those of the pulpit, school and press.

Public opinion is the court of last appeal; this court should be informed of the facts. Labor leaders recognize this and know that the success of any strike depends entirely upon public opinion. Mr. Gardiner believes it is economic suicide if industry on its side does not inform the community of its activity; otherwise it is never fully appreciated. It is particularly important to do so if industry is to meet the flood of criticism leveled at it by self-appointed champions of those who have suffered in recent years.

Fears Another Boom

Pinch hitting for Edward F. McGrady of the Department of Labor, Dr. Isidor Lubin, Commissioner of Labor Statistics, pointed out the danger of another boom. The United States cannot stand another boom, if it is to be followed by a depression similar to the last one. The man on the street simply will not stand for another depression without some change in our social and economic structure. Doctor Lubin believes conditions are ripe for a boom right now, but the movement should be turned into an ordinary expansion that can be sustained. Restricted production, at-

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- Electrical manufacturer, New York State—formerly used several machines on a shaft turning job, switched to a new Warner & Swasey turret lathe and saved \$2000 a year.
- Drill bit manufacturer, Pennsylvania—output on old machine 32 drill bits a day. A Warner & Swasey now turns out 53 per day.
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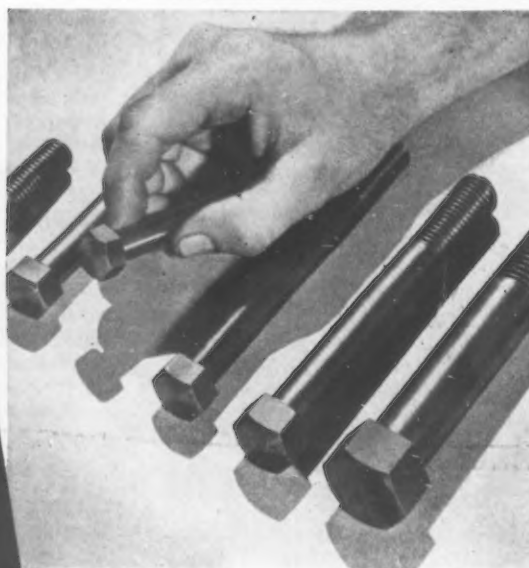
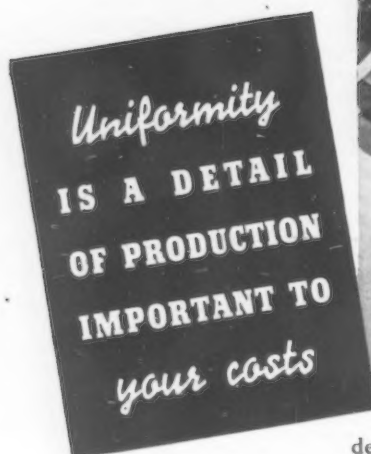


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tempts at price fixing and cartel agreements, however, will not accomplish the desired results.

It is Doctor Lubin's thesis that we are not producing enough goods and services for an adequate standard of living commensurate with our possibilities. Weekly earnings of all factory workers in July amounted to \$26, or \$1,430 annually per family of 1.1 workers on the average. One out of three families earns less than \$1,200 a year, which means they must draw upon past savings or go into debt even in order to provide the simple necessities of food, rent and clothing. This situation must be remedied, according to Doctor Lubin, if these people are to purchase and consume the expanding output of industry.

Chiseler Lowers the Level for All

Relying upon the competitive system to support our needs, we have assumed, the speaker said, the spoils to go to the most efficient producer. Too often, however, the ability to sweat labor has supplanted efficiency and the profits have gone to those who took the most advantage of their fellow man, particularly in the depression. As a result, employers with high standards have sometimes been obliged to adopt the tactics of his lowest competitor in order to survive, meaning the use of low wages, long hours and the employment of child labor.

On this premise, Doctor Lubin maintained that if we are to get a wider distribution of wealth, we will have to set a plane below which a manufacturer cannot go. Collective bargaining is one way of achieving this, but if collective bargaining is established in fact as well as in law, then we must assure the employer with a social conscience that he will be protected from the chiseler. Four years ago, Doctor Lubin said, everyone recognized the need for standards of hours and wages, but now that times are good again, they resist attempts to do so. In this connection, when asked if the establishment of a 40c. an hr. minimum would not raise costs so as to offset any gains in wages, Doctor Lubin replied that so many firms are already paying at least that amount that it would not be necessary (although it would be possible) for the efficient producers to raise prices. Some of the marginal firms might be forced out of business, to the net benefit to society in the long run, although some workers might temporarily be deprived of work.

Pleads for Industry to Rid Itself of Unemployment

Harkening back to the war days and the formation of the National Defense Council, wherein industry focused its strength in a national

emergency, Ernest G. Draper, Assistant Secretary of Commerce, called for systematic action to end unemployment. Toward this end he suggested the formation of a joint committee of manufacturers, both large and small, which would pledge itself to re-employ 4,000,000 men within the next two years. National income is approaching 70 billion dollars this year, 40 per cent higher than in 1933 and not far below the 1929 peak, so that the question of re-employment should not be left up to the Government. The task is big and the challenge is public, but industry is immense enough to cope with it successfully. An advanced social outlook is required, and it is a splendid way in which to answer the many critics of industry. Publicly we may be willing to affirm industry's responsibility for maintaining democracy, but we are not always ready to carry over this belief into private acts.

Structural Steel Gains Over 1936

ALTHOUGH new contracts for fabricated structural steel declined more than 8 per cent in July from the June total, the tonnage booked during the first seven months of this year was in excess of the tonnage booked during all of 1935 and in excess of that for the first eight months of 1936.

New contracts closed during July were 68.8 per cent of normal capacity (normal being the yearly average of 1928-1931) against a monthly average this year of 66 per cent. Shipments were 61.8 per cent of normal.

July contracts totaled 160,970 tons, as estimated for the entire industry, against 175,552 tons in June. The low month of the year was February, with 101,710 tons. June was the peak month. In July, 1936, the contracts closed totaled 199,057 tons.

Shipments in July were 144,560 tons against 147,618 tons in June and 155,124 tons in July last year.

Contracts for seven months this year totaled 1,079,769 tons against 961,033 tons in the first seven months of 1936, a gain of 12.35 per cent. Shipments totaled 924,616 tons compared with 847,368 tons in the first seven months of last year.

Jones & Laughlin Steel Corp. recently tapped the first heat from a new 135-ton stationary open-hearth furnace now in operation at the company's Aliquippa, Pa., works. This addition is the first new installation of steel making capacity in the Pittsburgh district for several years.

Exact Weight Scales

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Simply stated, the SHADOWGRAPH is a weighing unit composed of an even balance scale mounted on a common base plate. Indication is derived from a needle mounted on the load receiving end of the scale. This needle intercepts a



single light beam, thus projecting a pointed shadow onto a reading dial, either graduated to certain values or center marking only.

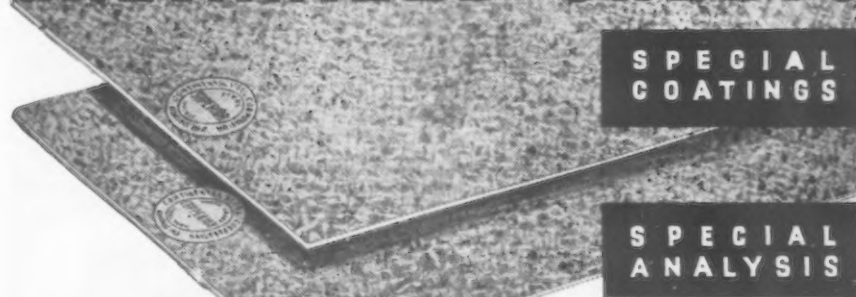
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British Steel Price May Go No Higher; Motor Manufacturer Threatens to Buy in U. S.

LONDON (Special Correspondence). — The vague rumors current for some time that British steel prices were shortly to be subjected to a further all-round rise has led Lord Nuffield, head of Morris Motors and Britain's biggest steel consumer, to renew his threat to buy steel in the United States.

"Steel manufacturers give us a price far too high to continue in the future their present production of steel," he declared at a Morris dealers' luncheon just held in London. "If they do not reduce the prices, there will be the greatest encouragement for some of us to buy our steel abroad, where it is manufactured at one-third of the cost."

"When the automobile industry was protected, we dropped our prices until they were 50 per cent lower. But when steel is protected the steel manufacturers raised

prices 25 per cent. They have increased their prices after receiving tariff protection.

"I want to repeat, that they have only to go on long enough and we will buy our steel from overseas. We will then be able to compete with our friends on the other side of the water."

On the general outlook, Lord Nuffield said: "The present state of trade is not a boom. It is just what the country deserves. I hope we shall keep out of war. If it is absolutely essential to clout the other fellow, well, get out and clout him as quickly as possible. But I do not think that that will be necessary."

"I hope that by the time we next meet, various countries will see the light and will see that what they are doing is of no good to themselves or the world."

Lord Nuffield closed on the fol-

lowing optimistic note: "There seems no end to the number of cars people will buy."

No Further Price Rise Likely

The possibility of a general increase in British steel prices on Oct. 1 is understood to have been seriously considered. One of the factors mentioned as calling for a rise in steel prices is the 5 per cent advance recently sanctioned in railroad freight rates.

On the other hand, the British Iron and Steel Federation has no statement to make regarding any further advance in prices. It is admitted that there may be some slight changes in the near future, but these will apply only to a limited number of products the prices of which have to be brought into line with the general range.

The last advance in British iron and steel prices was announced on May 1, the increases ranging from 17s. 6d. (\$4.37) for basic pig iron and £1 5s. (\$6.25) for hematite pig iron to £1 17s. 6d. (\$9.37) for mild steel plates, sections, and joists.

This advance was effective for all new business and was to operate until Dec. 31, next. It took into account the rise which had taken place in the prices of the principal raw materials. In fixing the period for the operation of the schedule it is to be assumed that the probability of a further increase in raw material prices was fully envisaged.

It is possible that higher steel prices may come into force at the commencement of 1938, but that possibility will be determined by the trend of events in the intervening months.

All increases in British iron and steel prices have, of course, to be sanctioned by the Import Duties Advisory Committee.

British Makers of Foundry Pig Organize

LONDON (Special Correspondence). — The Foundry Pig Iron Producers Association, a new organization concerned solely with the interests of the foundry and forge pig iron producers in England and Scotland, has just been formed at Birmingham. The association is not affiliated with the Iron and Steel Federation, although some of its members are identified with that body.

E. J. Fox has been appointed first chairman of the new association and H. H. Berresford vice-chairman.

MARSCHKE

HEAVY DUTY GRINDERS AND BUFFERS

"EVERYBODY USES IT, NOBODY SERVICES IT"

Is somebody's definition of a Floor Stand Tool Grinder. Even if this definition be an exaggeration, it illustrates the desirability of grinders that "stand the gaff" to give **continuously uninterrupted service with minimum maintenance.**

THAT IS WHY IT PAYS TO BUY MARSCHKE GRINDERS

Good design of Marschke Grinders is supplemented with proper materials and precision workmanship to assure **dependable durability and smooth running spindles.**

THE MARSCHKE LINE also includes a variety of Buffers and Swing Frame Grinders with direct drive and multi-speed A.C. motors and variable speed D.C. motors in sizes ranging from 1 HP. to 25 HP.

If you do not know the Marschke Representative in your territory, write direct to this company.

A catalog showing the full line of Marschke Grinders and Buffers, will be sent promptly upon receipt of request.

VONNEGUT MOULDER CORP.

1807 Madison Ave., Indianapolis, Ind.





PERSONALS..

P. C. DAY, who has been chief engineer of the Falk Corp., Milwaukee, since 1910, has been elected vice-president. He will remain in charge of engineering with the title of vice-president, chief engineer. Mr. Day came to this country in 1910 from England, where he had been in charge of the West Drayton gear works of the Power Plant Co.



W. P. WHITE has been appointed district manager in charge of steel and tube sales in the eastern and southern Pennsylvania district by the Steel & Tube Division of the Timken Roller Bearing Co., Canton, Ohio. He will make his headquarters at 1208 North Broad Street, Philadelphia. A. R. ADELBURG, district manager in charge of sales in New York, will supervise steel and tube sales in the Philadelphia district as well as in the New York area.



RICHARD SEIPT, who has been associated for the past two years with the sales department of the Laminated Shim Co., Inc., Long Island City, N. Y., has been made sales manager of the company. Previously he was connected with John Wood Mfg. Co. as sales engineer.



C. D. HOLLINS, of 2132 Morse Avenue, and C. P. GUION, of 1661 Milwaukee Avenue, Chicago, have



R. A. SCHULTZ, whose appointment as the new assistant master mechanic in Chevrolet's new Buffalo plant was announced in these columns last week.



LOOKING backward over 32 years it is easy to see now that the Continuous Flow Principle of Handling Materials was the inevitable course of progress in the Steel Industry. But at the beginning of Mathews engineering, back in 1905, it required a lot of vision to see that this principle should be applied wherever possible, and that materials handling was a great deal more than just moving things around from place to place.

Continuous Flow means logical sequence in production processes so that materials take the least time

from furnace to storage and shipping. Mathews systems are designed to integrate or unify all production processes, especially in sheet, strip, shape, pipe and tube production. They include roller, wheel, belt, drag chain, pallet and apron conveyers, transfers, tilters, up-enders and other mechanical handling devices.

Processing Equipment installed during 1936-37, embracing the ultimate in design and engineering in the Steel Industry, is illustrated and described in our catalog on Steel Plant Conveyers. Available now.

The leaders in this industry, responsible for 85% of steel production in the United States and Canada, are applying the Continuous Flow Principle of Handling Materials.

MATHEWS CONVEYER COMPANY 114 TENTH STREET
ELLWOOD CITY, PENNA.

MATHEWS

CONTINUOUS FLOW PRINCIPLE OF HANDLING MATERIALS

CONVEYERS

been appointed joint representatives in Wisconsin, Illinois, Iowa, and Indiana for Hammond Machinery Builders, Kalamazoo, Mich.

♦ ♦ ♦

W. A. NEILL, formerly manager of the air tool and portable compressor division of the Worthington Pump & Machinery Corp., Harrison, N. J., has been made manager of engineering and sales activities at the company's recently reopened plant at Holyoke, Mass. Mr. Neill was connected with the

Denver Engineering Works for a number of years following his graduation from Leland Stanford University. He later became affiliated with the Allis Chalmers Co. and the Dorr Co., Inc. He has been with Worthington since 1934.

♦ ♦ ♦

JOSEPH GARDBERG has been appointed manager of the newly-opened office in New Orleans of Cutler-Hammer, Inc., Milwaukee. The new office will be located at 539 Gravier Street.

GEORGE S. COOPER has been elected vice-president in charge of sales of the Diamond Alkali Co., Pittsburgh.

♦ ♦ ♦

RAYMOND A. DE Vlieg, associated with Kelvinator Corp., Detroit, since August, 1936, has been appointed general works manager of the Nash motors division of Nash-Kelvinator Corp., in charge of Nash factories in Kenosha and Racine, Wis., and Seaman Body Corp., Milwaukee. He entered the industry in 1910 in the engineering department of the Cadillac Motor Car Co., and in 1913 was appointed chassis engineer of Dodge Brothers. After World War service he became chief engineer and factory manager of the Handley-Knight Co., Kalamazoo, Mich., and next joined Chrysler Corp., becoming general works manager in 1926. Later he was vice-president of Reo Motor Car Co., Lansing, Mich., in charge of manufacturing.

♦ ♦ ♦

CHAUNCEY WILLIAMS has been promoted to general factory superintendent of the main works of the Four Wheel Drive Auto Co., Clintonville, Wis., to fill the vacancy caused by the death of Curran C. McConville. Mr. Williams joined the Clintonville plant in April, 1912, and since April 15, 1925, has been superintendent of machine shop No. 1, in charge of heavy production machinery.

♦ ♦ ♦

A. W. SODERBERG has been named chief engineer of the Homestead works engineering department of the Carnegie-Illinois Steel Corp. A. G. ERICSON has been made assistant chief engineer; G. M. MEIGS, chief design engineer; E. A. BROWN, JR., assistant to chief engineer in charge of fuel and steam; R. F. GELLERT, chief appropriation engineer; and R. J. MACKENZIE, assistant to chief engineer.

♦ ♦ ♦

MYRON C. TAYLOR, chairman of the United States Steel Corp., returned on Monday from Europe, where he has spent a few months, arriving in time for the monthly meeting of U. S. Steel directors on Tuesday. Mr. Taylor was accompanied on his return trip on the *Normandie* by George W. Bacon, engineer, with whom he has been working on plans for completion of the corporation's modernization program.

♦ ♦ ♦

H. R. BUTLER, formerly sales engineer with the Richard-Wilcox Mfg. Co., has been added to the

TRIPLE COMPRESSION SCRAP BALERS



STYLE
100 TC
(100 x 51 x 36)
and other sizes



Also Regular
**Double
Ram Presses**
in all sizes

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2724 S. 31st Street Milwaukee, Wisconsin

COMPLETE LINE OF BALERS: Electric and Hydraulic, also HYDRAULIC PRESSES AND PUMPS

PERFORATED METALS

INDUSTRIAL, ARCHITECTURAL, DECORATIVE

Industrial Screens for all purposes.

Cane and Machinery Guards.

Grilles to meet all requirements for heating, ventilating and air conditioning.

Registers and Cast Grilles.

DIAMOND has a national reputation for perforated metal products of the better quality.

DIAMOND MANUFACTURING CO.

Wyoming, Penna.

Sales Representatives in all principal cities.

sales staff of the Worcester Tram Rail Co., Inc., New York.



F. T. CARPENTER has been added to the Detroit staff of Philgas division of Phillips Petroleum Co., which markets liquefied petroleum gases for domestic, industrial, gas manufacturing and sundry uses. Mr. Carpenter, a graduate of Drake University in 1921, had his early training in the gas business under his father, a superintendent of a manufactured gas plant in Iowa.



RICHARD M. BOW has been appointed superintendent of industrial relations, Pittsburgh Steel Co., at the Allenport and Monessen plants.



WAYNE Z. FRIEND, heretofore chief technologist of the Philgas department, in Detroit, of the Phillips Petroleum Co., has been added to the research staff of the International Nickel Co., New York. He was graduated from West Virginia University in 1926 with a Master's degree in Chemical Engineering.



S. J. MORAN has been appointed assistant treasurer, Union Steel Casting Co., Pittsburgh. He has been with the company 18 years and prior to his appointment as assistant treasurer was purchasing agent. R. D. KENNEDY succeeds Mr. Moran as purchasing agent.

Japan to Expand Tool Industry

THE Japanese Government expects to inaugurate official measures to stimulate production of machine tools and to encourage replacements in existing plants, according to reports received by the Machinery Division, Department of Commerce.

It is believed that some definite legislation will be proposed during the special session of the Diet which opened on July 16. The goal is a production of about 130 to 140 million yen by 1941, it was stated.

One proposed plan would embody a semi-governmental company with a capital of about 20 to 30 million yen to be established in cooperation with the five principal machine tool manufacturers. The latter, however, are reported to be opposed to this plan. Another project discussed involves mobilizing the machine manufacturing industry for the production of parts under the direction of the Government, which would build assembly plants and regulate production

somewhat like the British "Shadow Scheme," according to the Commerce Department.

Information received by the Machinery Division indicates that the existing producers of machine tools are experiencing a shortage of both engineers and skilled workmen. This factor is a deterrent to increase manufacture of machine tools, but it is expected that the Ministry of Commerce and Industry will submit plans for the training of 4500 mechanics annually. According to the Japanese

press, a bill for this purpose will be introduced, carrying an appropriation of 20 million yen, for the establishment of training institutions in seven of the principal industrial cities.

It is also possible that some measures will be brought forward favoring the importation of machine tools for the purpose of increasing efficiency of manufacturing methods until such time as the national industry is able to supply the entire demand, the Machinery Division reported.



**BOLTS
NUTS
SCREWS
& RIVETS**

Quality, Accuracy, Uniformity,
Service and Deliveries that give
you Bolt Satisfaction.

CLARK BROS BOLT CO.
MILLDALE, CONN.

STANDARDS AND SPECIALS

a six and a half ton
COAL GRAB BUCKET . .
and not a pound of dead metal

This new Mead-Morrison 6½ Ton Grab Bucket is the ideal bucket for handling loose and broken material. Through the use of modern alloys and careful engineering, ruggedness has been increased and weight reduced. This bucket therefore operates more rapidly and consumes less power. It is a matter of mathematics to reduce the economies of purchase price and operation to dollars and cents. Let us send you facts and figures.



ROBINS
MATERIAL HANDLING
EQUIPMENT

ROBINS CONVEYING BELT CO.
15 Park Row New York, N. Y.
Branches in Principal Cities

Modern Spring Plant In Great Britain

LONDON (Special Correspondence).—Installation of what is claimed to be the most modern spring manufacturing plant in the world has just been completed at the works of Samuel Fox & Co., Stocksbridge, near Sheffield. This

company, which produces some 60 per cent of all motor truck, bus, and coach springs used in the United Kingdom, has now evolved what is practically an automatic system of production, the sequence providing for a continuous line flow from the bar stock shed to the completed product. The entire line of flow is fed by a "Telfer" system which covers every machine and furnace, and throughout the line of manu-

facture regular test checks are made for accuracy and quality.

Coming from the stores in various sizes and qualities, the long bars are first sheared into the respective plate lengths, after which the spring back-plates and plates having rolled eyes are heated at the ends and passed to a single-stroke eye-forming machine which produces a finished rolled eye. The plates are then pre-heated in a continuous furnace to 700 deg. C., and automatically discharged, this operation being followed by treatment in a large forging press in which, at a single stroke, the center dimple and shaped end of the plate are formed and the plate automatically discharged to an elevator.

For cambering and hardening the plates are deposited by the elevator into a mechanically-operated furnace, working at 900 deg. C., and finally discharged on to a landing table, after which the forged and re-heated plate is lifted into the cambering machine, which bends it to shape and automatically quenches it in oil, ultimately discharging it from a walking beam elevator. This machine is capable of handling all curvatures of plates and any width and thickness within the commercial vehicle range.

The plates are then packed into boxes in single layers and passed on to the walking beams of the tempering furnace which, also mechanical in operation, works at a temperature of approximately 500 deg. C. The boxes of plates are landed on to a roller table at the outlet end of the furnace and are then water-quenched and the boxes stacked. Next, the plate ends are ground and the auxiliary fittings (side shackles, etc.) assembled, the plates being mounted on completion on a rotating table assembly. Here the eyes are reamed in a two-spindle machine.

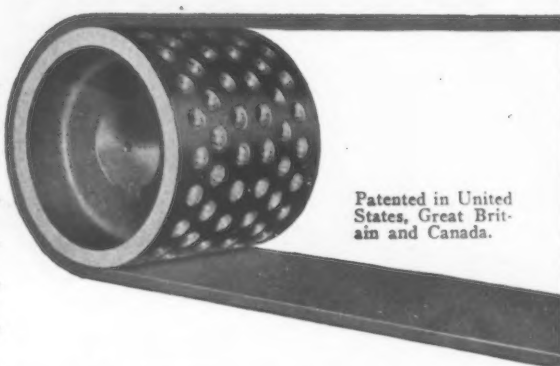
The springs are then assembled on an ingenious rotary table and passed on to skid conveyers, after which they are scrag tested to a predetermined stress and to a given camber height. Beyond this, bushes are inserted as required, the edges of the eyes are ground to width, and the springs are weight-tested, this completing the sequence of operations.

The furnaces are of the high-pressure gas type divided into three zones, which are individually electrically controlled to a predetermined range of temperature, an indicating lamp being mounted on a panel within sight of the operator. The new plant has an output capacity of 30 cwt. per hour.

This Pulley Revolutionized FLAT BELT Performance...

TEN BIG POINTS

- 1 Belt slippage eliminated.
- 2 Belt sealed to pulley by Vacuum Cups.
- 3 Belt "slap" eliminated.
- 4 Tight stretching of belts unnecessary.
- 5 Life of belt greatly increased.
- 6 Use of belt dressing unnecessary.
- 7 Production noticeably stepped up.
- 8 No power loss on heavy shock loads.
- 9 No pulley maintenance expense.
- 10 Vacuum Cup Pulleys never wear out.



Pick out your toughest job
and order a pulley on our 30-
Day Free Trial Offer

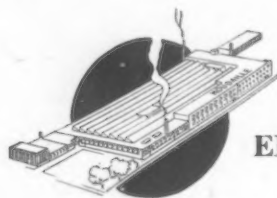
VACUUM CUP METAL PULLEY CO., INC.

1010 FORD BLDG.

DETROIT, MICH.

"A Belt Never Squealed on a Vacuum Cup Pulley"

IT costs you nothing to learn whether or not Houde can serve you. And it may mean a sizeable saving. For Houde is producing metal parts or complete mechanisms for a hundred or more prominent manufacturers more speedily, with greater precision and at a lower cost than they could do it themselves. We invite you to invite us to call and talk it over. Or, if you prefer, send blue prints for quotations.



HOUDE
ENGINEERING CORPORATION

BUFFALO, N. Y.

A DIVISION OF HOUDAILLE-HERSHEY CORPORATION

PWA Jobs in Michigan To Cost \$2,339,292

DETROIT, Aug. 31. — Nineteen new PWA projects have been released for construction in Michigan, including a \$589,000 bridge in Bay City over the Saginaw River, 108 ft. long bridge over Belle River in Marine City, three sewage disposal plants, eight schools, eight miscellaneous public improvements. The total estimated cost of these projects is \$2,339,292. The Federal Government is making grants totaling \$1,058,421 and loans of \$288,000.

At Bessemer, Mich., two diesel driven generators, a new building, two 15,000-gal. oil tanks, cooling water pond and a complete electrical distribution system throughout the city are planned. At Niles, \$371,000 will be spent for 9000 ft. of sewer system, a pumping station and sewage treatment plant. Ypsilanti will spend \$200,000 for a sewage disposal plant and pumping station. A new municipal building costing \$37,500 will be erected at Newaygo and a county building at Menominee. An addition to the water supply system is planned at Williamston and a sewage disposal plant and pumping station at Sandusky.

Coming Conventions

Sept. 20 to 22—American Gear Manufacturers Association, Spink-Wawasee Hotel, Lake Wawasee, Ind. J. C. McQuiston, Penn. Lincoln Hotel, Wilkinsburg, Pa., secretary.

Sept. 30 to Oct. 1—American Foundrymen's Association, fall technical conference, Columbus, Ohio. C. E. Hoyt, 222 West Adams Street, Chicago, secretary.

Oct. 7 to 9—Society of Automotive Engineers, second annual Aircraft Production Meeting, Los Angeles. J. A. C. Warner, 29 West 39th Street, New York, secretary.

Oct. 8 to 9—American Foundrymen's Association, St. Louis chapter regional conference, Missouri School of Mines, Rolla, Mo. J. W. Kelin, 4041 Park Avenue, St. Louis, secretary.

Oct. 11 to 12—Porcelain Enamel Institute, seventh annual meeting, Chicago, to be followed by the annual forum at Ohio State University, Columbus, Ohio. R. G. Calton, 612 North Michigan Avenue, Chicago, president.

Oct. 14 to 16—Electrochemical Society, Inc., 72nd general meeting, St. Louis. Dr. C. G. Fink, Columbia University, New York, secretary.

Oct. 18 to 22—National Metal Congress, held under the auspices of American Society for Metals, Ameri-


can Welding Society, Iron and Steel and Institute of Metals Division, A.I.M.E., Iron and Steel and Machine Shop Practice Divisions, A.S.M.E., Atlantic City Auditorium, Atlantic City, N. J. Information may be secured from W. H. Elsenman, 7016 Euclid Avenue, Cleveland, secretary, A.S.M.E.

Oct. 26 to 29—American Institute of Steel Construction, fifteenth annual convention, Greenbrier Hotel, White Sulphur Springs, W. Va. Business sessions will be held in the morning, forums and group conferences in the afternoon. V. G. Iden, 200 Madison Avenue, New York, director.

**PRECISION
SCREENS**

In the preparation of food products and in the screening, sizing and straining operations of chemicals, minerals, stone, coal and other materials, perforated metal plays an important part. H&K standards of quality and accuracy assure you of all that is best in screens. May we aid you in your selection?

Grilles of unusual beauty in exclusive designs suitable for public and commercial buildings and private homes. Ornamental sheets for radiator enclosures and metal furniture are furnished of any metal. Write us for prices and samples.

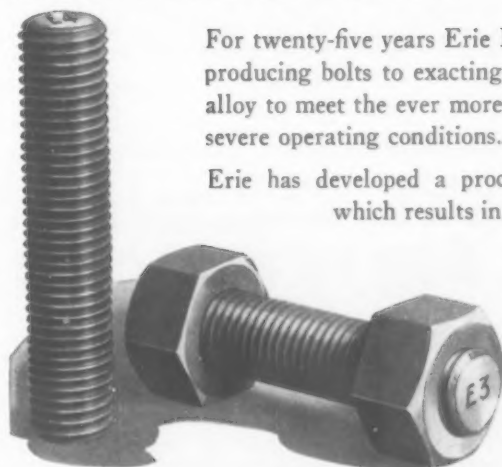


ANY METAL ANY PERFORATION

The
Harrington & King
PERFORATING CO.

5657 FILLMORE ST., CHICAGO **114 LIBERTY ST., NEW YORK**

ERIE BOLTS



For twenty-five years Erie Bolt & Nut Company has been producing bolts to exacting standards made of the proper alloy to meet the ever more rigid specifications imposed by severe operating conditions.

Erie has developed a process of manufacturing threads which results in great accuracy and smoothness of thread, thereby eliminating, to some extent, seizure under high temperatures.

Write for two new close tolerance thread specifications developed by Erie.

ERIE BOLT & NUT CO.
ERIE, PENNSYLVANIA

Battelle Appoints Research Associates

BATTELLE Memorial Institute has announced the appointment of four research associates for the year 1937-8. Russell H. Lauderdale, metallurgical engineer, University of Minnesota, has received an appointment as research associate in physical metallurgy, to study certain phenomena in the grain growth characteristics of steel; Carl R. Bloomquist, M.S., University of North Dakota, will study fundamental problems involving the heats of wetting at solid-liquid interfaces as an associate in the ore concentration division; Robert P. Graham, M.S., University of Washington, has been reappointed for a second year as research associate in ceramics where he will continue the study of base exchange phenomena, and John E. Dorn, Ph.D., University of Minnesota, has also been reappointed to continue studies of the solid solubilities of metals and alloys as research associate in physical metallurgy.

This Week on the Assembly Line

(CONTINUED FROM PAGE 55)

new models. Of this number, at least four are ready to resume production in the very near future. Plymouth, one of those that has operated until now, has shut down its assembly lines.

The resumption of operations is being preceded by a return to volume orders of steel, last week showing a considerable improvement over the previous week in volume. That prospects are bright is indicated by the size of some of

the orders for steel. In one case the tonnage was twice that expected on the basis of initial orders in former years. Suppliers of all sorts, but particularly steel men, were affected by an order from Packard stopping all shipments until the word is given to go ahead. It was explained that steel already is piled to the craneways in the Packard plant and that the resumption of production there is still held up by difficulties encountered in making the changeover for the new models to be produced. One section of the stamping plant at Packard has been practically rebuilt to accommodate one of the largest presses ever built for stamping metal automobile body tops, which will be a feature of the new Packard. The press, weighing 270,000 lb., will exert a pressure of 1,050,000 lb. with dies weighing 150,000 lb. New foundations were installed, extending 22 ft. below the level of the floor. The press is capable of forming a panel 14 ft. long and more than 7 ft. wide.

Studebaker First New Car Out

Studebaker will make its official bow Sept. 21, it has been revealed. It will apparently be the first car out, having made its preliminary curtsy, to the press, last Monday, 10 days before any of the other manufacturers plan to reveal their cars.

Hupmobile announces, as production gets under way on its new cars, that it has orders for immediate delivery of enough units to maintain steady production until November, while requirements specified by distributors are now well in excess of the factory's profitable production minimum for the next 12 months.

Graham-Paige announces an advance in retail prices on 1937 models of \$35 to \$50 on Sept. 15.

Chevrolet is making few me-

chanical changes this year, but a new clutch is one of them. The most important revelation concerning this firm is the fact that it will very soon introduce a cab-over-engine type of truck.



FREDERICK C. IRVINE, Denver representative of Joseph T. Ryerson & Son, Inc., died recently in that city, aged 58 years. He had been identified with the company since 1897 and had been stationed in Denver since 1914.

ALBERT E. CULLEY, who retired as treasurer of the Simonds File Co., a Simonds Saw & Steel Co. subsidiary, in 1932, died on Aug. 19 at Saranac Lake, N. Y. He was born in Fitchburg, Mass., 65 years ago.

GEORGE O. ORR, hot rolled sales department, Jones & Laughlin Steel Corp., died at his home in Pittsburgh recently. At one time he was manager of the price department which was discontinued several years ago. Mr. Orr had an uninterrupted service of 58 years with the Jones & Laughlin company.

TRADE NOTES

Union Mfg. Co., New Britain, Conn., has announced the appointment of Higgins & Linde, Inc., 564 West Randolph Street, Chicago, as its representative in the Chicago territory. The new headquarters will carry a full line of chucks and face plate jaws, hand chain hoists and trolleys.

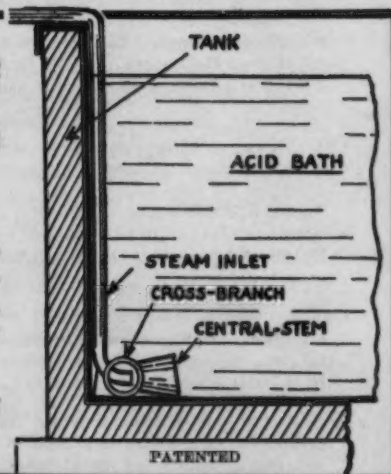
GUARANTEED TO HEAT ACID PICKLING BATHS UNIFORMLY AND ECONOMICALLY FOR BETTER PICKLING

Dietzel Lead Steam Injector

Heats and agitates bath thoroughly. Practically no hammering. Creates definite circulation in tank. Protects tank lining. Improves pickling. Injector is heavy-walled lead, lays flat on bottom. Draws cool acid in through cross branches. Forces hot acid out through center stem. Guaranteed against breakage. Write for complete information and prices.

DIETZEL LEAD BURNING COMPANY

1004 KEYSTONE BANK BUILDING, PITTSBURGH, PA.



Recent Developments In Metal Finishing

(CONTINUED FROM PAGE 38)

tubes by induced draft. The descending water is caught in a sludge tank and the floating lacquer skimmed from the top. The flood lights are above and back of frosted glass lamps which are protected from stray spray.

As 10 standard colors are used, color control is effected by having them all mixed in one room. They are then piped to the individual booths through 10 separate pipe lines, each line having a valve in each booth. The work is baked for 32 min. at 170 deg. F.

A substitute process for bonderizing has recently been introduced and is known as the "Cromodine" process and is designed primarily for parts that may be subjected to bending after japanning. Parts treated acquire a thin coating of iron chromate. The equipment required is practically the same as for bonderizing. The Chromodine solution heated to 180-190 deg. F. is either sprayed on or used as a dip, one minute contact only being necessary. This is followed by a cold rinse (dip or spray) and drying in a gas-fired oven. Before japanning, however, the surface is wiped with a tack rag.

"Labor Notes"

IN a recent issue of *Printers' Ink*, Roy Dickinson, president of the company, commented at length on the labor situation. The following quotations are from his column "Labor Notes" and supplement other extracts from that source in *THE IRON AGE* of Aug. 26, page 92.

"The late able Sam Gompers spent most of his life keeping the American Federation of Labor out of the labor-political movement. In the last two years Lewis and the Administration have succeeded in destroying a whole lot of Sam Gompers' life work. They are tying close together the future destinies of their new labor movement and the New Deal political movement.

"Naturally the A F of L leaders don't like the threatened destruction of their old autonomous unions. But deeper than that, they actually believe the breaking down of the independence of the old trade union is a big step in the direction of a collectivist state.

Whenever a political party sets up a labor movement which it encourages and almost "keeps," it is adopting one of the main tenets of the Fascist technique.

"Because of this fact and because of the new organizing ability of several new leaders whom Green has brought in, I do not think the American Federation of Labor is on its way out. I do not believe, either, because of vital differences in personality and methods of doing business, that there is much chance in the next year and a half anyway, of the CIO and the A F of L getting close together in one big labor movement.

* * *

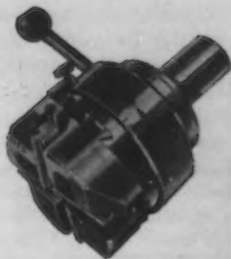
"Senator Black, pushing his wage and hour bill, has made the statement that over 3,000,000 people are getting less than 40c. an

hour. I haven't been able to find any statistics to support this assertion.

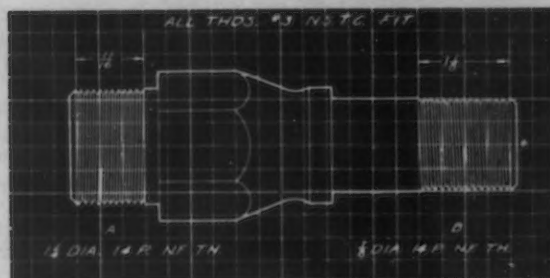
"In twenty-five representative manufacturing industries the average hourly earnings in May, 1937, were approximately 16 per cent higher than in 1929. It would seem, therefore, that we are already headed in the right direction as to wages without making a national law which might, in some cases, turn out to be a strait-jacket. It is the function of labor unions, especially the old crafts unions, to see that wages keep pace with increased profits and over the years they have done a pretty good job of it—too good, some manufacturers will testify.

"Most manufacturers agree that collective bargaining is here to stay and they, in my opinion, would

For Performance That Saves, Use The LANDMATIC



The H Type LANDMATIC Is a Hardened and Precision Ground Die Head For Use On Turret Lathes.



The H type LANDMATIC Die Head averages more than 100 pieces per hour on the close to the shoulder job illustrated above. The chasers average 1200 to 1400 threads per grind at a cutting speed of 30 feet per minute.

Check over the threading operations in your plant. The LANDMATIC may do as well for you.

Are your present threading methods efficient? The Check Book will tell you. Write for it.

LANDIS MACHINE COMPANY, INC.
WAYNESBORO, PENNA.

much rather deal with responsible unions than with a government board of five men, probably economists with no knowledge of costs, who would have power much greater than is generally recognized at the present time.

"Like many of the other bills which have been brought up in Washington, Senator Black's bill undoubtedly had good intentions. So had the original Tugwell bill. The trouble is that such bills are so loosely drawn, give so much power which might very easily be misused, that people who are normally liberal observe them with real apprehension.

"It seems highly probable, however, that in the midst of all this turmoil and striving of democracy to work in industry and government, there will come some sort of collective bargaining arrangement which will put the country on a sounder basis than in the past. If responsible labor and honest manufacturers can get together to improve workmanship, production, better marketing and living standards all at the same time—and there is no reason why they can't—we shall have a saner and more stable economy in this country than we have had in the past."

Steel & Wire Co. Makes Sales Staff Promotions

THE following appointments in the sales department have been announced by the American Steel & Wire Co.:

C. T. Gilchrist has been made manager of the manufacturers products department in the Chicago district. He has been assistant sales manager in the Cleveland district. C. J. McGregor remains as assistant manager of this department in Chicago.

H. D. Worthington has been appointed manager of sales in Kansas City. He has been assistant manager in the merchant trade department in the Chicago office.

J. D. Crandall has been promoted to assistant manager of sales of the Kansas City office, succeeding W. A. LaPierre, who has resigned. Mr. Crandall has been connected with that office as a salesman.

G. H. Waite, who has been manager of sales at the Kansas City office, has been made sales manager of the Salt Lake City office.

Thurman Haskell, who has been manager of sales in the Salt Lake City office, has been appointed to the same position in the Denver office, succeeding P. B. Garoutte, who has been transferred to other duties.

M. K. Stewart, who has been a salesman in the Denver office, has been made assistant manager of sales in Denver.

R. C. Pierce has succeeded Mr. Gilchrist as assistant manager of sales in the Cleveland district office. He has been connected with that office as a salesman.

Announcement

○ WING to the Labor Day holiday on Monday, Sept. 6, the Sept. 9 issue of THE IRON AGE will be mailed one day later than usual.

War News Boosts Tungsten Ore Prices

AS a consequence of the fighting in China, which supplies 66 per cent of the world's tungsten ore, the price of Chinese wolframite has been rising steadily and at present is hovering between \$26 and \$28 per net ton unit. Some unconfirmed sales as high as \$30 have been reported. One year ago the price of Chinese wolframite was \$16. Late reports indicate that the market is very tight with no relief possible until shipping is resumed at Shanghai.

Ludlum to Spend \$1,400,000 on Plant

UDLUM STEEL CO. has called a stockholders' meeting for Sept. 23, at which time the directors of the company will ask approval of plans to raise additional working capital by the issuance of not more than 125,000 shares of common stock to be offered present shareholders on a pro rata basis.

It is planned to spend \$1,400,000 of the \$2,500,000 that would be raised by this issue on plant improvement and expansion.

Over 500,000 malleable iron insulator caps for wire suspension insulators are being used in the electrification of the Pennsylvania Railroad's main line from Paoli to Harrisburg, Pa. The caps separate the strings of porcelain insulators, and are subjected to severe conditions requiring high corrosion resisting qualities and strength.



C. T. GILCHRIST



H. D. WORTHINGTON



J. D. CRANDALL



G. H. WAITE



T. HASKELL

New Deal Reported to Be Considering Fair Trade Practice Legislation

By L. W. MOFFETT

WASHINGTON, Aug. 31.—Reports are current that the New Deal, ever-insistent in its mania for regimentation and centralization of government control, come what will, is contemplating fair trade practice legislation on top of the drive it will continue for wage-hour legislation. In the reported plan is seen another attempt to recreate, full-panoplied, the highly discredited Blue Eagle, again to perch the stormy old storm bird high on all branches of American business and industry. If the push for the legislation is made, however, it is definitely a general view that the old bird will pack a potency that it did not have in its former days. This time, so it is said, industry and business will be told by the government just what trade practices they may have or may not have. No telling by business and industry just what trade practices they will accept. No codes.

The government, in its infinite wisdom and wishes, would do all the telling. It would measure by its own inflexible yardstick the precise limits within which business could perform under the cracking whip of bureaucracy. Whatever the Supreme Court might do to such a goose-step set-up, if written into the statutes, the point has been made that it would avoid the great pitfall into which the old Blue Eagle was dumped by the Supreme Court, nine-love. For the Supreme Court, not loved by the New Deal, in blasting the Blue Eagle, said it had taken upon itself authority that had not been given to it. It became an administrator of its own imperial fiat when actually Congress had not laid down specific rules for its conduct.

Proposed legislation, which some doubt will eventuate, would, it is said, be carried in a separate law with a bill of particulars. The administration itself would grasp definite power of dictation which business and industry would be commanded to obey.

One of the complaints in Congress against the NRA was that codes really were dictated by business and industry and that the government merely approved them,

often unwillingly. The new order would obviate this complaint at least and, so it is urged, would get support from former opponents who hanker for regimentation but want it done under complete governmental mastery.

On the other hand, there are groups in Congress who were fed to the full as were large sections of industry and the public, with NRA or any other kind of regimentation, except that some freely support subsidized agricultural regimentation because of resulting political emoluments. This group might conceivably block trade practice legislation, particularly in view of the wide open split in the majority party, part of which was due to the administration wage-hour legislation. Nevertheless, the administration has made it known that it will revive this legislation when Congress reconvenes, either at a special or regular session.

Much of the opposition to the legislation came from the Democratic South, and unquestionably the legislation again will be the object of heated controversy when it is again brought before Congress. Injection of fair trade practice legislation is expected to intensify the controversy, though the fact that sections of business and industry probably will favor it might give strength to the New Deal's expanded program. The support, however, might be considerably diminished if it turns out that trade practice legislation will be, as is probable, a galling, rigid governmental straight-jacket.

It is reported it would go beyond the so-called Richberg plan, which was cast aside, the New Deal throwing in its own Cohen-Corcoran written wage-hour bill. There are unverified reports that Richberg is, however, collaborating in the drafting of trade practice legislation. The wage-hour bill, it is reported, is to be even more rigid than that passed at the last session by the Senate but stymied from passage by the House Committee on Rules. The 40-40 wage-hour provisions will remain, it is stated, but numerous exemptions for particular industries will be struck out.

"Voluntary" Agreements

The trade practice law, if enacted, will call for so-called voluntary agreements. But there is an oily flavor about the word "volun-

tary." Industries "accepting" agreements, government dictated, would "receive advantages." Which is another way of saying the government would boycott industries which did not fall in line and goose-step to the commands of government bureaucrats to be added to the unending multiplication of bureaucrats and idlers on the enormous federal payrolls. The fair trade law would be administered, so it is said, by the Federal Trade Commission and Department of Commerce. Probably at the hands of the Department of Commerce, business and industry would receive sympathetic attention when drafting of agreements was under consideration.

But this probably would be of no avail since the Federal Trade Commission, according to the plan, could upset Department of Commerce cooperation by vetoing practices on complaint. And it doesn't take much for the anti-business FTC to issue complaints. Moreover, it is difficult to imagine the Department of Commerce and the FTC working in that "sweet harmony" about which the estimable James A. Farley so sweetly sings to drown the noise of bitter New Deal and anti-New Deal factions.

Wage-hour legislation, trade practice legislation—then what is the natural sequence? Price and production control? In other words, complete fascism over business and industry precisely as is being foisted on agriculture.

And it is not to be forgotten that the Supreme Court packing plan still is in the New Deal deck. The implication is obvious.

SWOC-Corporation Contract Up Feb. 8

AT the headquarters of the Steel Workers Organizing Committee in Pittsburgh it was stated that new collective bargaining negotiations with the Carnegie-Illinois Steel Corp. are to be started on Feb. 8, 1938, according to an Associated Press dispatch. The Carnegie-Illinois contract expires Feb. 28.

All organizers for the SWOC, it was further stated, have been instructed to arrange for the simultaneous expiration of all labor contracts with iron and steel and allied industries.

"We are doing it so that all contracts will expire on the same day and we can bargain simultaneously with the leaders of 'Big Steel,'" the union statement read.



..CAST IRON PIPE..

Boston has placed a tonnage of 48-in. pipe with the Warren Foundry & Pipe Corp.

Middleboro, Mass., has been granted \$20,000 WPA funds to extend its water system.

Lincoln, Mass., has placed 7000 ft. of 12-in. with Warren Foundry & Pipe Corp. It will spend \$30,850 on its water system, including WPA fund of \$13,882.

Herndon, Va., plans extensions and replacements in water pipe lines of Herndon Water Co., now being acquired, to be operated as municipal property in future; also installation of 50,000-gal. elevated steel tank and tower. Entire project will cost about \$68,000.

General Purchasing Officer, Panama Canal, Washington, closes bids Sept. 9 for 1200 ft. of cast iron soil pipe and soil pipe fittings (Schedule 3284).

Preble, Wis., plans pipe lines for water system and other waterworks installation. Fund of \$185,455 has been arranged through Federal loan and grant. H. R. Albert, 101 North Washington Street, Green Bay, Wis., is consulting engineer.

Antlers, Okla., plans extensions in water pipe lines. Financing has been arranged through Federal aid. T. G. Banks, 1425 N. W. Thirty-seventh Street, Oklahoma City, Okla., is consulting engineer.

Mount Pleasant, Ohio, plans pipe lines for water system and other waterworks installation. Cost about \$66,000. Financing is being arranged. Paul W. Elwell, 5006 Euclid Avenue, Cleveland, is consulting engineer.

Choteau, Mont., closes bids Sept. 6 for about 27,000 lb. of 6-in., including fittings, valves, etc., for water system. J. G. Jackson is city clerk.

Benson, Ariz., plans pipe lines for water system. Bond issue of \$24,000 has been voted, and Federal grant of \$18,000 is being secured to make fund of \$42,000 for project.

Port Arthur, Tex., plans pipe lines for extensions and replacements in water system. Fund of \$150,000 will be arranged for this and other waterworks installation. M. D. Gates is city engineer.

Wichita Falls, Tex., plans pipe lines for extensions and replacements in water system. Special election has been called Sept. 18 to approve bonds for \$350,000 for this and other waterworks installation. J. Bryan Miller is city manager.

Town of Lake, Milwaukee post office, has received PWA grant of \$585,000 toward proposed new artesian waterworks system estimated to cost \$1,300,000. Eugene P. Dunn is township clerk.

Brandon, Wis., will build new waterworks and sewerage system costing \$102,136. PWA grant of \$45,961 has been approved. Erwin F. York is village clerk.

Reedsville, Wis., plans construction of new \$100,000 waterworks, sewerage and sewage disposal plant. PWA grant of \$45,000 has been approved. Harry Krueger is village clerk.

Town of Prebel, Brown County, Wis., Green Bay post office, has received approval of PWA grant of \$83,455 towards new water system estimated to cost \$185,455. Henry Katers, Route 2, Green Bay, is town chairman.

Edgar, Wis., has received PWA grant of \$31,566 toward construction of waterworks and sewerage systems estimated to cost \$70,146. Ivan Cherney is village clerk.

Vallejo, Cal., has awarded 125 tons to Pacific States Cast Iron Pipe Co.

La Mesa, Cal., will open bids soon on 140,000 lin. ft. of 4 to 12-in. pipe.

Los Angeles will award 2200 tons of 4, 6 and 8-in. some time this week. United States Pipe & Foundry Co. is low bidder on 1900 tons, and American Cast Iron Pipe Co., low bidder on 300 tons.




RAILROAD BUYING

Pennsylvania has placed an order for one dining car with Edward G. Budd Mfg. Co.

Cambria & Indiana has ordered 500 steel hopper cars from Bethlehem Steel Co., and 300 from American Car & Foundry Co.

J. G. Brill Co., Philadelphia, has received an order from Baltimore Transit Co., Baltimore, for 10 40-passenger trolley coaches.

Milwaukee Road is recalling 300 workers in its West Milwaukee shops on Sept. 8 to begin manufacture of 500 automobile freight cars to be built at an estimated cost of \$1,250,000. Construction of ordinary freight and hopper cars on the 1937 program has been completed, together with 30 passenger coaches and seven dining cars. A large number of steel passenger coaches has been entirely renovated, and air-conditioning equipment installed. The 1938 car-building program at West Milwaukee remains to be definitely formulated, according to K. F. Nystrom, general superintendent.



....PIPE LINES....

Caddo Pipe Line Co., First National Bank Building, Shreveport, La., a subsidiary of Grogan Oil Co., same address, plans about 10 miles of 6-in. welded steel pipe from Libson to Homer, La., for crude oil transmission. Connection will be made at last noted point with steel pipe line system of Louisiana Oil Refining Co., running to Shreveport.

Interstate Natural Gas Co., Ferriday, La., has authorized new 22-in. welded steel pipe line from Ferriday to point on Mississippi River, for natural gas transmission. Cost close to \$75,000.

United States Engineer Office, Vicksburg, Miss., asks bids until Sept. 8 for four steel discharge pipes (Circular 33); until Sept. 9, 116 sections of 24-in. o.d. welded steel pipe (Circular 35); until Sept. 13, 110 steel pipe couplings for 24-in. o.d. welded steel pipe, complete with bolts, nuts, gaskets, etc. (Circular 38).

Texas-New Mexico Pipe Line Co., Hobbs, N. M., plans 12-in. welded steel pipe line in part of Lee County, about 40 miles, for natural gas transmission, connecting with present system in that area. Cost close to \$300,000.

Colorado Springs, Colo., E. L. Mosley, city manager, plans extensions in gas distribution pipe lines. Program and appropriation are being arranged for work to be carried out during remainder of 1937.

Brownwood, Tex., plans pipe line system for gas distribution. A special election has been called to vote bonds for \$30,000 for work.

Continental Oil Co., Ponca City, Okla., plans about 17,750 ft. of 6-in. welded steel pipe in oil and gas field at Billings, Noble County, Okla., for natural gas transmission to new natural gasoline plant to be built in that district.

State Department of Public Works, Sacramento, Cal., has let contract to Western Pipe & Steel Co., San Francisco, for 18,688 ft. of 8-in. steel pipe, dipped and wrapped, from State Farm, Napa, Cal., to reservoir at Veterans' Home, Yountsville, Cal., for water supply.

South Renton Water District No. 50, Renton, Wash., plans 3, 4 and 6-in. steel pipe for main water supply and distributing system. Cost close to \$50,000, exclusive of labor. Parker & Hill, Smith Tower Building, Seattle, are consulting engineers.

United States Engineer Office, Federal Building, Buffalo, asks bids until Sept. 20 for 785 lin. ft. of 16-in. steel dredging pipe for Buffalo and Cleveland (Circular 20).



..SAN FRANCISCO..

...PWA approves allotment of \$15,000,000 for western states.

SAN FRANCISCO, Aug. 30.—Award to Soule Steel Co. of 1500 tons of reinforcing bars involved in a viaduct for the San Francisco-Oakland Bay Bridge railway system was the only important letting of the week.

U. S. Pipe & Foundry Co. is low bidder on 1900 tons and American Cast Iron Pipe Co. low on 300 tons of 4, 6 and 8-in. cast iron pipe for the Los Angeles Department of Water and Power. The contract will probably be placed this week.

The Lemon Grove & Spring Valley Irrigation District, La Mesa, Calif., will construct a water distribution system involving 140,000 ft. of 4 to 12-in. cast iron pipe. The PWA has made an allotment of \$263,000 to help finance the project and bids will be opened in the near future. The PWA has also approved the allotment of more than \$15,000,000 for construction of public improvements in the eleven Western states. Water and electric distribution systems will claim the major portion of this allotment.

Carrying an appropriation of \$8,293,000 for projects in California, the Rivers and Harbors Bill has been passed by Congress and is now before the President. More than \$4,000,000 of this will be spent at San Diego and \$2,000,000 for Sacramento River flood control if the bill is approved.

Steel mills are still quite active, though deliveries of nearly any form of steel may be had within from 15 to 30 days.



FABRICATED STEEL

... Lettings decline to 6515 tons from 17,560 tons a week ago.

... New projects lower at 9715 tons as against 14,880 tons last week.

... Plate awards call for 2275 tons.

NORTH ATLANTIC STATES

Farmington, Me., 125 tons, State bridge, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Windham, Conn., 405 tons, bridge, to American Bridge Co.

Hamden, Conn., 165 tons, Davis Street bridge, to New England Iron Works, New Haven, Conn.

New York, 190 tons, floodlight towers, Lincoln Tunnel, to Integral Steel Fabricating Co., New York.

New York, 460 tons, pier wales, Rockaway Beach Channel Drive, to Harris Structural Steel Co., Plainfield, N. J.

New York, 1010 tons, New York City exhibition building, World's Fair, to Lehigh Structural Steel Co., Allentown, Pa.

Brooklyn, 225 tons, Procurement Division, Treasury Department, general storehouse annex, to American Bridge Co.

Buffalo, 140 tons, addition for Washburn-Crosby Co., to Buffalo Structural Steel Co., Buffalo.

Philadelphia, 160 tons, press shop for E. G. Budd Mfg. Co., to Roy A. Robinson Co.

Anacostia, D. C., 150 tons, hangar extension, to Lehigh Structural Steel Co.

THE SOUTH

Cairo, W. Va., 360 tons, State highway bridge, to Pan-American Bridge Co., New Castle, Ind.

Paducah, Ky., 390 tons, post office, to Bethlehem Fabricators, Inc., Bethlehem, Pa.

Smithfield, N. C., 130 tons, underpass, to Southern Engineering Co., Charlotte, N. C.

Garfield County, Okla., 295 tons, to George C. Christopher & Son, Wichita, Kan.

CENTRAL STATES

Ecorse, Mich., 140 tons, storage building, Murray Body Corp., to Whitehead & Kales Co., Detroit.

Detroit, 100 tons, conveyer supports, Ford Motor Co., to Whitehead & Kales Co.

Cincinnati, 130 tons, Vulcan Copper & Supply Co., erecting shop, to Jones & Laughlin Steel Corp.

Newark, Ohio, 325 tons, building for Owens-Illinois Glass Co., to Indiana Bridge Co., Muncie, Ind.

Manchester, Ind., 115 tons, bridge, to Central States Bridge Co.

Milwaukee, 1500 tons, Allis-Chalmers expansion program, to American Bridge Co.

NEW STRUCTURAL STEEL PROJECTS NORTH ATLANTIC STATES

Boston, 300 tons, Northeastern University building.

Boston, 100 tons, Huntington Avenue subway.

New York, 300 tons, addition to public school No. 26 in Bronx; bids Sept. 2.

Jersey City, N. J., 400 tons, Westinghouse Elevator Co. building.

Carneys Point, N. J., 230 tons, building, E. I. duPont de Nemours & Co.

Clark Township, near Cranford, N. J., 600 tons, Inland Mfg. Division, General Motors Corp., Albert Kahn, Inc., Detroit, architect.

Ashley, Pa., 1200 tons, Maxwell coal breaker.

THE SOUTH

Wheeling, W. Va., 300 tons, building, Fidelity Investment Association.

Stearns, Ky., 500 tons, bridge.

Pickwick Landing, Tenn., 350 tons, temporary bulkhead framing for TVA.

State of Georgia, 1000 tons, bridge.

Derby, Tex., 675 tons, bridge.

CENTRAL STATES

Detroit, 220 tons, crane girders, Ford Motor Co. open-hearth building.

Detroit, 100 tons, building for Peerless Pattern Co.

Detroit, 300 tons, factory, Fruehauf Trailer Co.

Detroit, 200 tons, new hot mill, Ford Motor Co.

Detroit, tonnage unstated, warehouse, Briggs Mfg. Co. Vernon plant; Herman & Simons, architects.

Bay City, Mich., tonnage unstated, PWA project W1400, Saginaw River bridge.

Marine City, Mich., tonnage unstated, PWA project W1406, Belle River bridge.

Grand Rapids, Mich., 220 tons, grade separation bridge.

Ivorydale, Ohio, 600 tons, research and development building, Procter & Gamble Co.

St. Paul, Minn., 220 tons, ore spouts, Great Northern Railway.

Ames, Iowa, 700 tons, State highway bridge; bids taken.

St. Louis, 650 tons, pipe factory, Keasby & Mattison.

Kansas City, 550 tons, Big Blue River bridge, Kansas City Terminal Railway.

FABRICATED PLATES

AWARDS

Baltimore, 110 tons, 33 tanks for U. S. Industrial Alcohol Co., to Birmingham Tank Works, Birmingham.

Baltimore County, Md., 250 tons, two water tanks for County Commission, to Chicago Bridge & Iron Works, Chicago.

Mobile, Ala., 1704 tons, 31 tanks for Aluminum Co. of America, to Chicago Bridge & Iron Works.

Los Angeles, 210 tons, 10,000 ft. of 30-in. pipe for Metropolitan Water District, to Southern Pipe & Casing Co.

NLRB Witness in Weirton Steel Case Favors Employees Representation Plan

PITTSBURGH, Aug. 31.—Taking on all the aspects of a marathon, the National Labor Relations Board sponsored "trial" covering charges against the Weirton Steel Co. has just finished the second lap with only 40 out of a possible 300 NLRB witnesses having testified. At least three more weeks will be required to present the Government's case.

Clyde A. Armstrong, Weirton's chief counsel, has threatened to call "7500 witnesses if necessary" to refute the NLRB's charges of fostering a company union and coercing workers.

Weirton Steel got a "break" yesterday when a NLRB witness testified that in his opinion "the employees' representation plan is a thoroughly satisfactory method for collective bargaining." Citing his

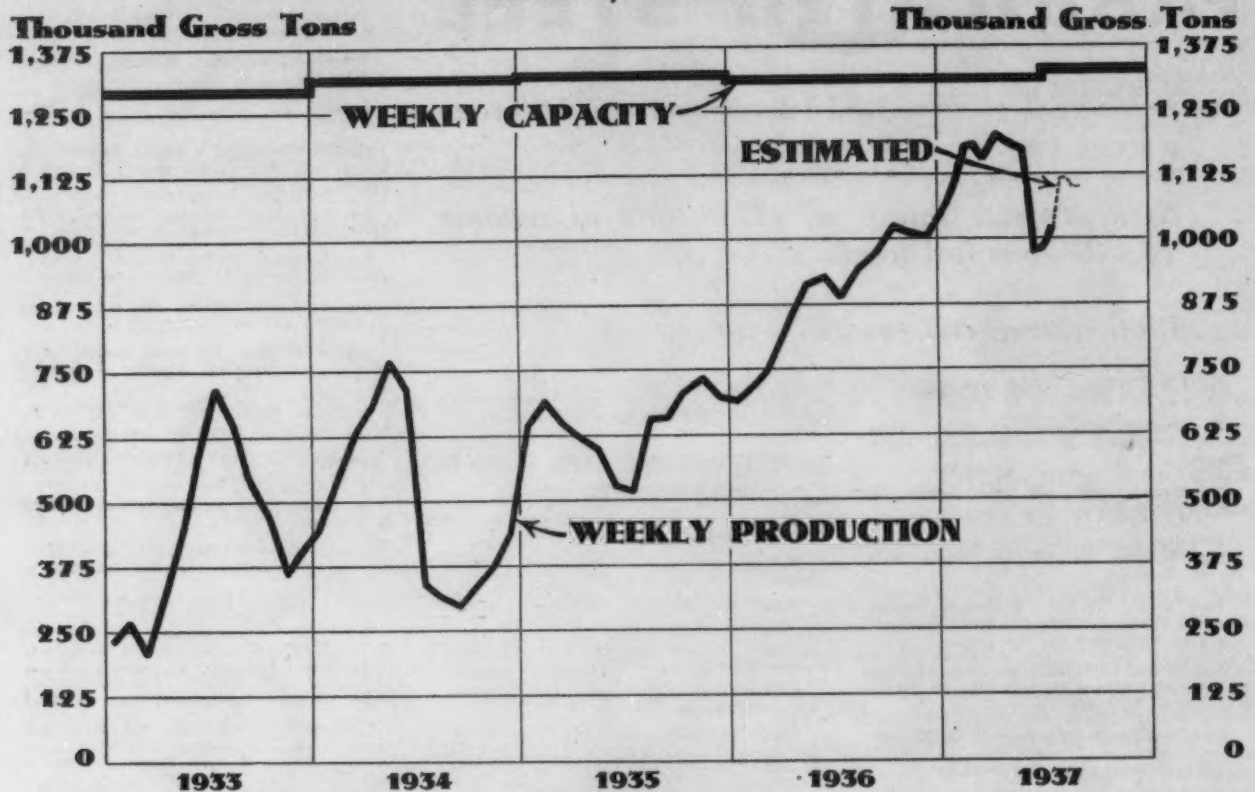
reasons for this opinion, he said: "I believe in the employees representation plan due to the fact that many employees' grievances I have handled during my term in office have been settled satisfactorily and immediately and this type of representation gives a man a chance for promotion according to ability rather than seniority as in some other plants."

The witness, who is a "matcher" at Weirton Steel, in answer to a question as to whether Weirton had dominated the employees' representation plan, replied "absolutely not."

The NLRB has subpoenaed several members of the ERP in an attempt to prove that the company has fostered and dominated the employees' plan.

PRODUCTION

Average Weekly Production of Open-Hearth and Bessemer Steel Ingots by Months, 1933-1937, and Estimated Production by Weeks in 1937



Figures for the Current Week Are Not Indicated on the Chart Until the Following Week

STEEL INGOT PRODUCTION BY DISTRICTS: Per Cent of Capacity

	Current Week	Last Week
Pittsburgh	82.0	83.0
Chicago	86.0	86.0
Valleys	81.0	80.0
Philadelphia	68.0	68.0
Cleveland	77.0	79.0
Buffalo	88.5	88.5
Wheeling	97.0	97.0
Southern	71.5	71.5
Ohio River	93.0	94.5
Western	95.0	95.0
St. Louis	81.5	81.5
Detroit	100.0	100.0
Eastern	98.0	98.0
Aggregate	83.0	83.0

Weekly Booking of Construction Steel

	Aug. 31, 1937	Aug. 24, 1937	Week Ended Aug. 3, 1937	Sept. 1, 1936	Year to Date 1937	1936
Fabricated structural steel awards.....	6,515	17,560	13,000	11,265	783,365	760,355
Fabricated plate awards.....	2,275	675	1,820	210	71,345	175,965
Steel sheet piling awards.....	0	4,345	695	41,155	39,795
Reinforcing bar awards.....	3,170	11,430	13,820	3,315	194,485	254,315
Total Lettings of Construction Steel, ...	11,960	34,010	28,640	15,485	1,090,350	1,230,430

...SUMMARY OF THE WEEK...

... Steel industry still waiting for rise in business.

o o o

... Some improvement in automobile buying the major change.

o o o

... Scrap declines in all markets after two months' sustained uptrend.

STEEL business is obviously still in a waiting period. The extent of the autumn demand is not clearly indicated by present conditions, but there is a growing disposition to question whether the aggregate volume will be as large as was expected earlier in the summer. The current outlook points to increasing tonnage in the lighter products, particularly sheets and strip and wire products, but not much improvement in the immediate future in the heavy products, such as shapes, plates, pipe and rails.

The light products will undoubtedly benefit from a rising trend in automobile production of new models, from expanded farm buying power and a generally good prospect for sales of consumers' items, which run into the hundreds, and in which steel has rapidly been taking the place of other materials. In fact, such improvement as has already occurred in steel sales during the past two or three weeks has been largely in the light products.

On the other hand, the trade prospects in the heavy products are at the moment not clearly outlined. Building construction, so far as steel lettings reflect it, has been following a downward trend during the summer, and the number of new projects in sight does not promise an immediate reversal. Aside from 800 steel hopper cars ordered by the Cambria & Indiana, there has been no railroad buying of importance during the week, and the amount that may develop during the next month or two probably will not be sufficient to keep car shops busy throughout the remainder of the year. Although the danger of an immediate strike of railroad workers has been averted by mediation, the labor situation will be a deterrent in railroad purchasing activities until it is definitely settled, which may not be until late in the year.

In view of the sold-up condition of European mills, British and German in particular, a revival is expected in export buying, which at the moment is in a lull. Many Japanese inquiries are pending, but action apparently has been deferred. Exchange difficulties may be one reason, some steel

sales already having been made on the basis that actual processing of the material will not be started by American mills until funds are available in New York banks. However, a conjecture is that Japan is delaying purchases until the progress of the Chinese warfare determines whether the United States Neutrality Act is likely to be invoked. An outstanding export item is the sale of 21,000 tons of plates for oil storage tanks.

A POSSIBLE reflection of revised estimates of the volume of autumn steel business is the action taken by a number of important mills in suspending shipments of steel scrap. This, together with some apprehension in the scrap trade that export shipments to Japan might be stopped at any time, and the further fact that steel companies are bringing pressure to bear on scrap exporters to reduce the volume of scrap exports, has caused weakness in all scrap markets after a sustained rise for about two months. Heavy melting scrap is off 75c. a ton at Chicago, 50c. at Pittsburgh and is unchanged at Philadelphia, where export buying has helped to strengthen the market. From the June lows, steel scrap had risen \$4 a ton at Chicago, \$3.50 at Pittsburgh and \$3 at Philadelphia. THE IRON AGE composite price has declined to \$20.17 from \$20.58 a week ago.

STEEL plant operations are virtually unchanged from last week, being estimated at 83 per cent. A one-point loss to 82 per cent in the Pittsburgh district, a two-point decline in the Cleveland-Lorain area to 77 per cent and a one-point gain at Youngstown, with sustained production elsewhere, result in a change in the aggregate output so slight as to have no importance.

Order backlogs are rapidly diminishing, however, having become exhausted in some products, while in others they will be cleaned up some time during September unless new business increases materially. Aside from a fairly sharp gain in bookings of sheets and strip from the Fisher Body units of General Motors, there has been no appreciable improvement in buying in the past week, but August as a whole has shown a gain of possibly 10 or 15 per cent in tonnage over July, which, however, was the low month of the year in new business for most steel companies.

Pointing to steel companies' expectations of a substantial volume of business through the winter months is the present heavy ore movement. Water shipments of Lake Superior ore in August will exceed 11,000,000 tons, topping the 10,806,967 tons shipped in August, 1929, the previous high record for that month. It is indicated that the total up to Sept. 1 will be reported as more than 45,600,000 tons, compared with 43,717,787 tons in the same period of 1929.



... PITTSBURGH ...

... Moderate improvement in sales; better volume expected in few weeks.

... Operations in Pittsburgh district down one point to 82%.

... Change due in wire selling practices; steel scrap off 50c. a ton.

PITTSBURGH, Aug. 31.—For the third successive week, aggregate finished steel sales show moderate improvement. Heavier buying is expected within the next few weeks based on the probability of a step-up in automotive purchases, and a seasonal gain in miscellaneous bookings. It will undoubtedly take at least two or three weeks to determine a more definite trend in steel buying.

Sales of semi-finished steel and wire products have expanded somewhat in the past week from the previous period and a slight improvement occurred in sheet bookings. Demand for heavy structural shapes has been declining for the past few weeks.

Steel ingot operations in the Pittsburgh district are down one point to 82 per cent, with the Wheeling district rate unchanged at 97 per cent.

Tin plate operations continue at above 100 per cent, with little likelihood of a change before Oct. 1.

There is a distinct possibility that action will be taken within a week toward eliminating the difference between Northern and Southern merchant wire selling practices. The plan now in vogue in the South, in addition to functional allowances, provides for quantity deductions of 5c., 10c. and 15c. per 100 lb., governed by total sales of a commodity for shipment to one destination.

Raw material markets are quiet and dull. No. 1 heavy melting is nominally quoted at \$21.50 to \$22, off 50c. from last week's price.

Pig Iron

With many consumers having worked off supplies purchased some

time ago, new business is showing more vigor than was the case early in this quarter. Quite a few users have placed contracts for fourth quarter.

Semi-Finished Steel

Specifications in the past week have stepped up somewhat over the previous period. Orders from non-integrated mills are more active and some fair-sized export business has been placed recently. With consumers' stocks being rapidly depleted, a continuation of the upward trend is expected.

Bolts, Nuts and Rivets

Leading bolt and nut manufacturers have reaffirmed present prices for fourth quarter delivery. This action was expected in view of the reaffirmation on other steel products. Total incoming business is rather light and, although some improvement is noted, no sharp upturn in orders is expected until new model automobile production gets under way. Orders from fabricating shops are holding up fairly well but fresh business is undoubtedly being affected by the presence of greater than expected inventories at consumers' plants.

Bars

For the third successive week, hot rolled bar sales have improved but incoming business is still somewhat under shipments. Producers confidently expect a material change in the rate of new business after Labor Day and when automotive buying increases. Meanwhile, backlogs have been further reduced and promises are ranging from two to three weeks. Current miscellaneous demand is for actual requirements, there being no in-

centive for forward buying. In most cases, August bookings compare favorably with those of July.

Cold Finished Bars

Although total tonnages booked in August were not impressive, they ran from 25 to 30 per cent ahead of July orders. Buying in the past week was not quite up to the previous period but was substantially better than early August activity. Orders are mainly from the automotive trade, jobbers, sewing machine, and textile machinery manufacturers.

Reinforcing Bars

Reinforcing bar specifications placed in August were ahead of July bookings. Awards in the past week included several medium-sized tonnages but new inquiries were not impressive. S. A. Healy Co., Chicago, is general contractor on a Detroit sewage treatment plant project requiring 2400 tons of bars.

Plates and Shapes

Heavy plate and shape specifications were off some in August compared with July bookings. Demand for heavy structural shapes has declined somewhat more than for plates. Inquiry for the latter item is quite active at the moment and involves shipbuilding and oil tank projects. Structural inquiries and awards from a tonnage standpoint have shown a further decline.

Sheets

Sheet buying, if anything, was a little bit better in the past week than in the previous period but incoming business continues somewhat below shipments with the result that backlogs have been further reduced. Automobile buying is slow in making its appearance and there has been no significant pick-up in miscellaneous products.

Wire Products

Demand for wire products continues to expand and specifications for manufacturers' wire are holding at a good level. Wire rods are moving better, and quite a number of jobbers have been placing fair-sized orders within the past few weeks. Indications are that merchant wire demand will continue its trend upward for some time.

Tin Plate

Operations are still above 100 per cent and are likely to remain at this high rate for at least another month. Although requests for better deliveries continue to be

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous
Advances Over Past Week in Heavy Type, Declines in Italics

Rails and Semi-finished Steel

Per Gross Ton:	Aug. 31, 1937	Aug. 24, 1937	Aug. 3, 1937	Sept. 1, 1936
Rails, heavy, at mill.....	\$42.50	\$42.50	\$42.50	\$36.37 1/2
Light rails, Pittsburgh	43.00	43.00	43.00	35.00
Rerolling billets, Pittsburgh	37.00	37.00	37.00	30.00
Sheets bars, Pittsburgh	37.00	37.00	37.00	30.00
Slabs, Pittsburgh	37.00	37.00	37.00	30.00
Forging billets, Pittsburgh.....	43.00	43.00	43.00	37.00
Wire rods, Nos. 4 and 5, P'gh	47.00	47.00	47.00	38.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	2.10	2.10	2.10	1.80

Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh	2.45	2.45	2.45	1.95
Bars, Chicago	2.50	2.50	2.50	2.00
Bars, Cleveland	2.50	2.50	2.50	2.00
Bars, New York	2.78	2.78	2.78	2.30
Plates, Pittsburgh	2.25	2.25	2.25	1.90
Plates, Chicago	2.30	2.30	2.30	1.95
Plates, New York	2.53	2.53	2.53	2.19
Structural shapes, P'gh	2.25	2.25	2.25	1.90
Structural shapes, Chicago.....	2.30	2.30	2.30	1.95
Structural shapes, New York	2.5025	2.5025	2.5025	2.16 1/2
Cold-finished bars, P'gh	2.90	2.90	2.90	2.25
Hot-rolled strips, P'gh	2.40	2.40	2.40	1.95
Cold-rolled strips, P'gh	3.20	3.20	3.20	2.60
Hot-rolled annealed sheets, No. 24, Pittsburgh	3.15	3.15	3.15	2.50
Hot-rolled annealed sheets, No. 24, Gary	3.25	3.25	3.25	2.60
Sheets, galv., No. 24, P'gh....	3.80	3.80	3.80	3.20
Sheets, galv., No. 24, Gary....	3.90	3.90	3.90	3.30
Hot-rolled sheets, No. 10, Pittsburgh	2.40	2.40	2.40	1.95
Hot-rolled sheets, No. 10, Gary	2.50	2.50	2.50	2.05
Cold-rolled sheets, No. 20, Pittsburgh	3.55	3.55	3.55	3.05
Cold-rolled sheets, No. 20, Gary	3.65	3.65	3.65	3.15
Wire nails, Pittsburgh.....	2.75	2.75	2.75	2.10
Wire nails, Chicago dist. mill	2.80	2.80	2.80	2.15
Plain wire, Pittsburgh	2.90	2.90	2.90	2.40
Plain wire, Chicago dist. mill	2.95	2.95	2.95	2.45
Barbed wire, galv., P'gh.....	3.40	3.40	3.40	2.60
Barbed wire, galv., Chicago dist. mill	3.45	3.45	3.45	2.65
Tin plate, 100 lb. box, P'gh.....	\$5.35	\$5.35	\$5.35	\$5.25

On export business there are frequent variations from the above prices. Also in domestic business, there is at time a range of prices on various products, as shown in our detailed price tables.

Pig Iron

Per Gross Ton:	Aug. 31, 1937	Aug. 24, 1937	Aug. 3, 1937	Sept. 1, 1936
No. 2 fdy., Philadelphia.....	\$25.76	\$25.76	\$25.76	\$21.3132
No. 2, Valley furnace	24.00	24.00	24.00	19.50
No. 2, Southern Cin'tl	23.69	23.69	23.69	19.44
No. 2, Birmingham.....	20.38	20.38	20.38	15.88
No. 2, foundry, Chicago*.....	24.00	24.00	24.00	19.50
Basic, del'd eastern Pa.....	25.26	25.26	25.26	20.8132
Basic, Valley furnace	23.50	23.50	23.50	19.00
Malleable, Chicago*	24.00	24.00	24.00	19.50
Malleable, Valley	24.00	24.00	24.00	19.50
L. S. charcoal, Chicago.....	30.04	30.04	30.04	25.2528
Ferromanganese, Seab'd car-lots	102.50	102.50	102.50	75.00

*This quotation is subject to a deduction of 38c. a ton for phosphorus content of 0.70 per cent or higher.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Scrap

Per Gross Ton:	\$21.75	\$22.25	\$21.25	\$17.25
Heavy melting steel, P'gh.....				
Heavy melting steel, Phila....	19.75	19.75	19.75	15.00
Heavy melting steel, Chicago	19.00	19.75	20.25	15.75
Carwheels, Chicago	19.75	19.75	19.75	15.50
Carwheels, Philadelphia	20.75	20.75	19.75	16.25
No. 1 cast, Pittsburgh	20.25	20.25	20.25	15.75
No. 1 cast, Philadelphia	21.25	21.25	20.75	15.75
No. 1 cast, Ch'go (net ton).....	15.75	16.75	16.75	13.50
No. 1 RR. wrot., Phila.....	20.75	20.75	19.75	14.75
No. 1 RR. wrot., Ch'go (net)	16.25	19.75	19.75	13.75

Coke, Connellsville

Per Net Ton at Oven:	\$4.35	\$4.35	\$4.35	\$3.65
Furnace coke, prompt				
Foundry coke, prompt	5.00	5.00	5.00	4.00

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, Conn....	14.00	14.00	14.00	9.75
Lake copper, New York.....	14.12 1/2	14.12 1/2	14.12 1/2	9.87 1/2
Tin (Straits), New York.....	58.75	58.876	58.875	43.12 1/2
Zinc, East St. Louis	7.25	7.25	7.00	4.85
Zinc, New York	7.60	7.60	7.85	5.22 1/2
Lead, St. Louis	6.35	6.35	5.85	4.45
Lead, New York	6.50	6.50	6.00	4.60
Antimony (Asiatic), N. Y....	17.00	15.375	15.375	12.50

The Iron Age Composite Prices

Finished Steel

Aug. 31, 1937	2.605c. a Lb.
One week ago	2.605c.
One month ago	2.605c.
One year ago	2.159c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strip. These products represent 85 per cent of the United States output.

	High	Low
1937.....	2.605c., Mar. 9:	2.330c., Mar. 2
1936.....	2.330c., Dec. 28:	2.084c., Mar. 10
1935.....	2.130c., Oct. 1:	2.124c., Jan. 8
1934.....	2.199c., Apr. 24:	2.008c., Jan. 2
1933.....	2.015c., Oct. 3:	1.867c., Apr. 18
1932.....	1.977c., Oct. 4:	1.926c., Feb. 2
1931.....	2.037c., Jan. 13:	1.945c., Dec. 29
1930.....	2.273c., Jan. 7:	2.018c., Dec. 9
1929.....	2.317c., Apr. 2:	2.273c., Oct. 29
1928.....	2.286c., Dec. 11:	2.117c., July 17
1927.....	2.402c., Jan. 4:	2.212c., Nov. 1

Pig Iron

\$23.25 a Gross Ton
23.25
23.25
18.73

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

High		Low	
\$23.25, Mar.	9	\$20.25, Feb.	16
19.73, Nov.	24	18.73, Aug.	11
18.34, Nov.	5	17.83, May	14
17.90, May	1	16.90, Jan.	27
16.90, Dec.	5	13.56, Jan.	3
14.81, Jan.	5	13.56, Dec.	6
15.90, Jan.	6	14.79, Dec.	15
18.21, Jan.	7	15.90, Dec.	16
18.71, May	14	18.21, Dec.	17
18.59, Nov.	27	17.04, July	24
19.71, Jan.	4	17.54, Nov.	1

Steel Scrap

\$20.17 a Gross Ton
20.58
20.42
16.00

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

High		Low	
\$21.92, Mar. 30:	\$17.08, June 15		
17.75, Dec. 31:	12.67, June 9		
13.42, Dec. 10:	10.33, April 23		
13.00, Mar. 13:	9.50, Sept. 25		
12.25, Aug. 8:	6.75, Jan. 3		
8.50, Jan. 12:	6.43, July 5		
11.33, Jan. 6:	8.50, Dec. 29		
15.00, Feb. 18:	11.25, Dec. 9		
17.53, Jan. 29:	14.08, Dec. 3		
16.50, Dec. 31:	13.08, July 2		
15.25, Jan. 11:	13.08, Nov. 22		

numerous, the intense pressure of the past few weeks has eased slightly.

Strip

Total strip sales continue unimpressive, and producers are still looking for heavier automobile purchases. Miscellaneous demand is only fair but greater activity is expected after Labor Day.

Tubular Goods

Shipments of oil-country goods are heavy, with consumers pressing mills for better delivery. A minor spurt in oil-country goods specifications has materialized in the past week, but the general trend is toward an easing off from the recent high rate of bookings. Standard pipe buying continues dull, with boiler tube activity unchanged.

Coal and Coke

The market for both furnace and foundry coke is rather dull, with little or no spot business. Some blast furnace interests have cut



.GREAT BRITAIN..

... Mills sold ahead for many months.

LONDON, Aug. 31 (By Cable).—Iron and steel demand is still unabated and prices are no deterrent to consumers. Only one Cleveland furnace is producing foundry iron, so that new business is impossible and deliveries are heavily in arrears. Twenty Cleveland furnaces are making basic pig iron, but no new business is practicable. Steel capacity working is assured for many months, and new orders are only accepted on the condition that this year's delivery is not promised.

Semi-finished steel supplies are increasing, and good arrivals of Continental material are expected early in September of which Welsh rollers should secure a fair proportion.

The tin plate market is quiet as makers offer little for early shipment and are cautious over quoting forward, owing to the uncertainty of future costs. The shortage of steel is such that many mills are heavily in arrears on deliveries. Prices are firm. Black and galvanized sheets are quiet.

Lord Craigmyle, chairman of the Peninsular Orient Line, stated that ship prices are now at a level barely remunerative to shipowners, many of whom are suspending building programs.

The Continental steel market is quiet, but works are well placed. A renewal demand is expected in September or October.



...CINCINNATI...

... Demand for sheets improve; pig iron dull.

CINCINNATI, Aug. 31.—Pig iron sales were few and small while shipments have been sharply retarded. Easing of the melt in most foundries is reported until after Labor Day. Agricultural equipment melters are still the exception to the rule, prospects of good harvests bringing demand from farm areas steadily upward. Melters are without heavy inventories and any improvement in the general melt is expected to push pig iron demand sharply upward.

Improved automobile demand raised sheet steel bookings to an 80 per cent of capacity level the past week. Miscellaneous demand is supplying a steady flow of orders and contributing a substantial undertone to current operations. Production schedules are being held at near to plant capacity except in units dependent upon other overcrowded departments. Backlogs are rapidly being reduced and prompt delivery on most types of sheets is now available.

Steel ingot output is adhering to a 93 per cent level. All but three of the district's 34 open hearths are in operation.

Efforts Being Made to Bring About Voluntary Curb on Scrap Exports

A FEW informal conferences have been held within the past week or two between representatives of the Independent Iron and Steel Producers Committee on Scrap and the principal exporters of scrap in an effort to bring about a voluntary limitation of scrap exports and thereby to preserve essential scrap supplies for the domestic steel industry.

THE IRON AGE is authoritatively informed that these meetings, which have thus far been held by very small groups, have been merely exploratory toward a definite plan. In view of this fact, no public announcement has been made, nor will there be one until a plan that seems to be workable has been presented.

Rumors to the contrary notwithstanding, it is positively stated that no agreement will even be considered that would involve domestic sales of scrap. THE IRON AGE is informed that neither side would be a party to an arrangement that would tend to exercise any control over domestic supplies or prices, as such might be construed as in restraint of trade and a violation of the anti-trust laws.

Thus far the only feasible and legal plan seems to be a voluntary limitation on exports by the scrap

exporters themselves. In other words, scrap exports might be placed on a quota basis that would prevent an excessive amount leaving the country. This in itself, it is believed, would remove some of the present speculative factors from scrap export trade and at the same time lessen speculation in domestic supplies.

Unless the scrap exporters come to some agreement among themselves with respect to export trade, the Independent Iron and Steel Producers Committee on Scrap probably will press for legislation to curb exports at the next session of Congress.



..TRADE NOTES..

American Steel & Wire Co. transferred its sales promotion and advertising department to Cleveland from Chicago on Aug. 30. This change follows the recent removal of the general sales department to Cleveland where the general offices of the company have been located for a number of years. Wilmer H. Cordes continues in charge of sales promotion and advertising department.



CHICAGO

... Mills begin to need tonnage in nearly all products.

... Demand for steel this fall may be less than has been forecast.

... Automobile buying is improving and is expected to reach peak in September.

CHICAGO, Aug. 31.—Production of steel ingots continues unchanged this week at 86 per cent of capacity.

Backlogs of all companies in this district are declining generally, shipments having been in excess of orders for some time past. One producer reports for last week the best sales since July 23 and the best specifications since July 9. A spokesman for this company, however, does not believe that the increase, which he said was only a few thousand tons above the other weeks named, constitutes an upward turn in the business picture, but states that conditions probably will continue about the same as over the past few weeks until automobile production gets fully underway.

Other mills report that tonnage is needed in nearly all lines, and for some mills at least present backlogs will not last far beyond September, and in some lines, not that long. Except in wire and sheets, demand for steel products this fall may very likely be less than has been forecast throughout the spring and summer. Of the specifications being received, those from makers of farm equipment are most prominent, as has been the case most of the summer. Their high rate of operations still shows no sign of being decreased within the next few weeks. Also active have been automobile companies and makers of automobile parts. Full operations in automobile plants are not expected for a few weeks, although steel companies here have received some good orders for 1938 models. Orders from this industry are increasing daily and one seller looks for the peak about the middle of September.

Car and rail buying programs, which have been expected to materialize this fall, do not now seem so likely to be placed before late in the year, no benefit then to be received during the fourth quarter this year. Several factors may be blamed for the withholding of this work from the market, chief among which are the pay boosts already given to non-operating employees and the likelihood of increases soon to operating personnel, and discriminatory legislation in Washington. A number of cars are on order at present and many of these are not even started as yet, although the steel in most cases has already been ordered.

Lower brokers' bids, resulting from reluctance on the part of the mills to pay current prices for scrap, have caused a 75c. reduction to a range of \$18.75 to \$19.25 in No. 1 steel this week and corresponding decreases throughout the remainder of the list.

Pig Iron

Shipments have not yet reached a peak, since automobile foundries have not been able to start full production, and probably will not for a few weeks more. One pig iron sales office reports shipments considerably better than in July, while another reports a slight reduction. Stove foundries are not as active as was expected at this time, although there is much activity in those plants casting for makers of machine tools and farm implements. Considerable buying was noticed following the reaffirmation of prices for fourth quarter, which may be taken as an indication of normal need and not a result of an artificial stimulus. Foundry coke shipments are about equal to

those of July, indicating a steady melt in the district.

Plates

Demand for plates currently is mostly from tank makers and for structural purposes. Railroads still have considerable tonnage on the books, and are specifying steadily against their orders, but little new buying from this source is reported. One mill's heaviest backlog is in plates, amounting to about 10 weeks, while other mills seem to be decreasing their old plate orders rapidly.

Bars

With the heaviest automobile buying yet to come, bars are still generally available in a month's time. Good orders continue from makers of tractors and farm implements.

Wire and Wire Products

One of the brightest fall seasons in several years is waiting for makers of wire and wire products. With large farm crops assured in most sections of the country, the amount of money the farmer will be able to spend on rehabilitation and replacement around his property will be greatly increased over previous fall seasons. Demand for fencing wire and other wire of a miscellaneous nature is expected to be good this year from the rural areas.

Delivery may be made of manufacturers' wire in a week's time, both high and low-carbon material. Wire stocks over the country are down generally, and these probably will be started toward replacement around Sept. 15. August sales of one large producer were about 15 per cent greater than in July. The only dull spot in the wire picture is in nails.

Strip

Strip sales thus far have been only fair, but automobile production is expected to bring up the average on this product. A nominal delivery today for strip is two to three weeks, although the time required will vary considerably according to the type of strip ordered.

Structural Shapes

With 1500 tons of shapes for Allis-Chalmers Co. in Milwaukee awarded to American Bridge Co., and 2000 tons for the same company's Le Crosse, Wis., construction expected to be given to the same producer, the largest tonnage to enter this district in some time has been disposed of, and the market continues in the doldrums. In-

quiries are out for bridges in Georgia, Texas, Iowa, Missouri and Kentucky, none of which is large, and a post office in Evanston, which will take 200 tons, will be bid Sept. 17.

Sheets

Sheets are the most heavily demanded items in the steel line at the moment. Deliveries are still most extended in hot rolled, from five to six weeks to over 15 weeks being required, according to the company involved. Cold rolled sheets may be delivered by one producer as soon as three to four weeks, but the bulk of the automobile buying, which as yet has not started, is expected to lengthen this quotation considerably. Galvanized is being promised in five to six weeks, while iron enameling stock may be had in three to four weeks.

Pittsburgh Mourns Death of A. W. Mellon

ANDREW W. MELLON, renowned statesman, industrialist, financier and philanthropist, died in Southampton, N. Y., on Aug. 26, aged 82 years. Mr. Mellon's holdings in iron and steel and allied enterprises were quite extensive and included such companies as the Aluminum Co. of America, Bethlehem Steel Corp., Koppers Co., American Locomotive Co., Pullman Standard Car Mfg. Co., Westinghouse Air Brake Co., Westinghouse Electric & Mfg. Co., American Rolling Mill Co., Allis-Chalmers Mfg. Co., and Pittsburgh Coal Co.

One of the most widely known projects of Mr. Mellon is probably the Mellon Institute of Industrial Research, Pittsburgh, which he and his brother, R. B. Mellon, founded in 1913. His last great undertaking was the establishment of a National Art Gallery in Washington, to which he contributed his own private collection, estimated by art experts to be worth more than \$50,000,000. Mr. Mellon made substantial contributions of a philanthropic nature during his lifetime and it was disclosed a few days ago that his entire fortune will go to charitable and industrial institutions.

Mr. Mellon served as Secretary of the Treasury under three presidents and terminated his public career as United States Ambassador to Great Britain. Called by many the "greatest Secretary of the Treasury since Alexander Hamilton," Mr. Mellon was widely regarded as one of the ablest supporters of Herbert Hoover as President.



... Pig iron crossing ocean both ways.

BOSTON, Aug. 31.—New England has a pig iron paradox. Iron is crossing the Atlantic in both directions. To England, the past week, went 3000 tons of northern New York iron, and Sweden contracted for an additional tonnage, while from Holland came iron for Providence. Dutch iron of late has not been a market factor, and resumed offerings are made with a view to maintaining a place in the selling field. Foundries are taking iron more freely, but by no means actively. Recent buying has been very largely in 100-ton lots. Japan requires more iron, but is having difficulty in establishing credits. The New England melt is expected to gradually increase after Labor Day.

England Campaigning To Find More Scrap

WASHINGTON, Aug. 31.—While this country is trying to iron out the perplexities of the scrap export situation, England has launched a national campaign to collect scrap iron for the exclusive use of domestic manufacturers after the expiration of current export contracts.

American Consul Harry E. Carlson has reported to the Commerce Department from London that such a plan had been agreed upon by the British Iron and Steel Federation and the National Federation of Scrap Merchants. The program also contemplates selling the country on the necessity of throwing out old iron and waste from houses and factories.

The American consul said that reports in London indicate that, as a result of the sharp increase in the demand for steel and the inherent difficulty of rapidly enlarging the local output of pig iron, the percentage of scrap used in steel manufacture has risen and at the same time there has been a marked diversion of supplies to other countries, particularly those with no substantial iron resources of their own.

Reports from the American commercial attache in Tokyo to the Commerce Department show that Manchurian production of pig iron has reached a new high of 282,498

metric tons for May, a 3.1 per cent increase over April, and a 11.4 per cent increase over the May, 1936, production. Steel ingot production was 512,379 tons, a gain of 72,650 tons over May, 1936.

Sheet & Tube To Float Bond Issue

THE board of directors of the Youngstown Sheet & Tube Co. on Monday called a special meeting of the shareholders for Oct. 19, in connection with further financing contemplated by the company. The purpose of the meeting is to place the company in position to undertake new financing to provide working capital, from which large expenditures have been made for plant improvements and betterments, to increase inventories and receivables, etc., and to facilitate completion of further improvements contemplated in both the Youngstown and Chicago districts.

The action to be taken by the shareholders at the special meeting includes approval of an increase in the authorized common shares of the company from 2,000,000 to 2,500,000 shares, the release of preemptive rights of common shareholders on not exceeding 400,000 shares, and authorization to the board of directors to issue securities convertible into common shares.

Government Awards Large Steel Orders

WASHINGTON, Aug. 31.—Government contracts totaling \$1,710,328 for iron and steel products have been awarded during the three-week period ended Aug. 26, according to the Department of Labor's Division of Public Contracts, the agency administering the Walsh-Healey Act.

The Dravo Corp. of Pittsburgh heads the list with a \$193,100 contract for supplying TVA spillway gates. The Apollo Steel Co. of Apollo, Pa., comes next with a contract of \$101,016.95 for furnishing the War Department with sheet steel.

Among the other companies listed include: Midvale Co., Philadelphia, \$75,891 for steel forgings; Carnegie-Illinois Steel Corp., McKeesport, Pa., and Chicago, \$41,650 for steel; Erie Forge Co. Erie, Pa., \$38,723; Camden Forge Corp., Camden, N. J., \$37,711.19; and the Struthers Wells-Titusville Corp., Titusville, Pa., \$37,119.87, all for supplying steel forgings to the Navy Department.



... PHILADELPHIA ...

... Operations maintained at 68 per cent.

o o o

... Volume of orders shows a slight improvement.

o o o

... Scrap inactive, with prices on the easy side.

PHILADELPHIA, Aug. 31.—At least several sellers report that orders in August showed a slight improvement over those in July, both as regards volume and diversification. This trend has encouraged sellers to a considerable extent, and is tentatively conceded to be a prelude to considerably better buying generally expected by the middle of September. Many members of the trade, both buyers and sellers, are still on vacations, which has interfered with business to a considerable extent over the past fortnight.

Although backlogs are slightly lower than they were a week ago, there has yet been no tendency for mills to ease off on operations. The average district rate here is unaltered from a week ago at 68 per cent of capacity. At least several producers in this territory have found that export orders taken earlier in the year have been of considerable help in rounding out schedules during the rapid decline in domestic business of the past month. Sizable quantities of finished and semi-finished steel and pig iron are clearing from this port and from Baltimore, and there is still a good volume of business yet on books for delivery abroad over the remainder of the year.

The usual barometer of the steel industry, scrap, is at the moment in a state of uncertainty, with sellers and buyers of two minds with regard to the probable trend of prices over the next month. Buyers, as a group, now believe they will soon be able to pick up supplies at lower price levels, whereas sellers hope that quotations will hold near present levels. The demands for finished steel over the next fortnight will undoubtedly force a trend either one way or another.

Pig Iron

Foundry schedules are being maintained at a high level, which

should result in a better demand for pig iron within the near future. So far, users view the recent reaffirmation of prices as an opportunity to delay new purchases until additional iron is absolutely needed, although any new influx of export orders could easily frighten in considerable domestic tonnage. In general, furnace reports show that the aggregate of August shipments fell below July deliveries, but the recent pick-up in releases indicates that September deliveries will show a distinct improvement. At the moment, there is no new Japanese inquiry, and the Far East will probably be no great factor in the market for at least several months. Heavy deliveries to Europe are going forward from here, however, and England is generally expected back in the market for sizable lots within a month. Some Dutch and Indian iron continues to come into this area, as furnaces in those countries wish to maintain relations with their better customers in this country.

Sheets and Strip

Principal sellers are discouraged by the lack of consumer interest, but some significance is attached to the greater diversity of orders noticed over the past week or so. That the market will take a distinct turn for the better after Labor Day is confidently expected on all sides, mostly as a reflection of a usual fall pick-up in miscellaneous and automobile demands. All abnormality in the delivery situation has entirely disappeared. Delivery in two to three weeks is possible in most cases, although at least one mill can still do no better than four to six weeks on cold rolled grades, six to eight weeks on hot rolled and eight to ten weeks on galvanized. Strip demand is at a low ebb, and deliveries of two to three weeks is typical of the market.

Plates and Shapes

New plate orders are confined to miscellaneous small lots, and most mills have salesmen out searching for new commitments to hold up rolling schedules. Deliveries, in general, are down to a normal one to two weeks. The fabrication of structural shapes is still in a quiet period, and the outlook at the moment is none too encouraging. Phoenix Iron Co. has shared in a 500-ton award from the navy department and will supply 160 tons for a bridge at Hamden, Conn., and Robinson Iron & Steel Co. will erect a 200-ton press shop for E. G. Budd Mfg. Co. The only new project of any size is a building for Carr-Lorey Glass Co., Baltimore, which calls for 280 tons. Tonnages of reinforcing steel are also very scarce, which condition is forcing keen price competition on each new inquiry. About 650 tons is still active on the Lit Brothers store here, but market activity otherwise is confined to scattered small lots for industrial use.

Imports

The following iron and steel imports were received here during the past week: 2500 tons of chrome ore from the Philippine Islands and 4789 tons from Cuba; 195 tons of pig iron and 9500 tons of manganese ore from British India; 1000 tons of manganese ore from Russia; 100 tons of manganese ore from England; 6 tons of structural shapes from France; 63 tons of structural shapes, 61 tons of steel bands and 20 tons of steel bars from Belgium; 65 tons of steel bars, 26 tons of wire rods, 108 tons of steel tubes and 53 tons of steel forgings from Sweden.



... ST. LOUIS ...

... Moderate expansion in steel buying.

ST. LOUIS, Aug. 31.—There has been a moderate expansion in buying of finished steel products during the past week, with the betterment being accounted for mainly by miscellaneous users. Building materials, including structural shapes, continue to lag, and not much change is looked for before mid-September, when a number of highway and bridge projects will be let. Sales from warehouse are reported below a month ago, but still in larger volume than at any similar period during the past several

years. Wire and wire products are active, and there is also an active movement of hoops and bands and other cooperage items. Purchasing by the railroads is confined to necessities. Some reordering of tin plate by can manufacturers is reported. Galvanized roofing is moving in heavy volume to the South.

Pig iron contracting for fourth quarter has been below expectations since books were opened at unchanged prices earlier in the month. However, there is a fair volume of spot buying from day to day, mainly by jobbing foundries. Shipments so far this month are ahead of the like interval in July, and indications point to the heaviest August movement since 1929. Stove plants are operating on high schedules, and have begun shipments to customers for fall distribution. The implement people are also maintaining record production, and jobbing foundries in the Tri-City area, which are getting overflow work from the implement interests, are running from five to six days per week, when able to do so under labor agreements. New automotive business is disappointing.



...BIRMINGHAM...

... Steel and pig iron markets quiet, but production runs high.

BIRMINGHAM, Aug. 31.—Fourth-quarter pig iron buying has started, but is still on a small scale. Last week there was a slight improvement in pig iron shipments, after a lag all through the month. August shipments were about the same as those for July.

The steel market has lately been quiet, but roofing sheets and drum stock sheets have been fairly active. Wire products demand is now beginning to show more life. There has been a good movement of cotton ties, as the season for them is now in full swing. It is expected that bookings of roofing sheets and wire products will begin to pick up, with the fall farm market near at hand. Plates, bars and shapes have been sluggish. However, some good tonnage is in prospect.

For the past two months and more, shipments have been exceeding bookings and substantial reductions have been made in backlogs. On most items mills are now able to deliver more promptly than for a long time.

The pressure pipe market is also dragging and new tonnage during the past two months has not been up to what was hoped for. Contractors' lettings have been scattered and municipalities have been backward in their requirements. Los Angeles, Cal., opened bids Aug. 26 on about 2500 tons. This will probably come to the Birmingham district, as U. S. Pipe & Foundry Co. and American Cast Iron Pipe Co. were low bidders.

Eighteen open hearth were worked last week and the same number is scheduled for this week. There are eight active at Fairfield, four at Ensley and six at Gadsden. Blast furnace operations remain unchanged, with all 18 furnaces still in production.

Pullman-Standard Car Mfg. Co. secured the Texas & Pacific order for 500 box cars, with an option for 500 additional. No statement has yet been made as to whether they will be built in the Bessemer plant.

The Louisiana Highway Commission has formally awarded Steel Construction Co. the contract for the approaches to the new Baton Rouge bridge. Bids were opened some weeks ago. The amount of steel required will be around 12,500 tons. The company is a subsidiary of the Ingalls Iron Works.

Ingalls has also booked 320 tons for the new pulp plant at Plymouth, N. C. This will be fabricated at its Verona, Pa., plant. Virginia Bridge Co. has received a contract for 450 tons for a bridge in Lincoln County, Ga.



....BUFFALO....

... Steel production at unchanged rate.

BUFFALO, Sept. 2.—Buffalo furnaces are selling for fourth quarter, but there has been no rush of business. In some quarters a little easing is noted, as is usually the situation about Labor Day. Shipments are moderate, but foundry operation is expected to pick up when the automobile industry gets into heavier production.

Bethlehem's Lackawanna plant continues to operate 28 open hearths, Republic, seven, and Wickwire-Spencer Steel Co., two.

A local fabricator has the contract for 140 tons for an addition to the Buffalo plant of the Washburn-Crosby Co. All general con-

tracts for the 500-ton Vestal, N. Y., school job have been rejected and plans will be revised. Additional bids are being taken on the International Harvester Co. 400-ton Buffalo addition. Gardner Construction Co. of Schenectady has the general contract on the Chaumont school job involving 100 tons of fabricated structural.

August warehouse business was a little lighter than July's.



REINFORCING STEEL

... Awards of 3170 tons—5570 tons in new projects.

AWARDS

Duxbury, Vt., 100 tons, two State highway bridges, to Truscon Steel Co., Youngstown, Ohio.

State of Connecticut, 165 tons, Merritt Highway bridge, to Truscon Steel Co.

Brooklyn, 100 tons, building, F. & M. Brewing Co., to Bethlehem Steel Co.

Weehawken, N. J., 250 tons, trusses, New Jersey approach, Lincoln Tunnel, to Jones & Laughlin Steel Service, Inc., Long Island City, N. Y.

Flushing, N. Y., 100 tons, trusses, Flushing River bridge, to Jones & Laughlin Steel Service, Inc., Long Island City, N. Y.

Washington, 325 tons, Dunbarton College, to Rosslyn Steel & Cement Co., Rosslyn, Va.

Cincinnati, 225 tons, building, National Cash Register Co., to Cincinnati Builders Supply Co.

Moraine City, Ohio, 400 tons, Frigidaire building, to Bethlehem Steel Co.

San Francisco, 1504 tons, viaduct for San Francisco-Oakland Bay bridge, to Soule Steel Co.

NEW REINFORCING BAR PROJECTS

Boston, 400 tons, Huntington Avenue subway.

South Boston, 225 tons, service building, Westinghouse Electric & Mfg. Co.

East Hartford, Conn., 200 tons of mesh for State road.

Norwalk, Conn., 175 tons of mesh for State road.

Queens, N. Y., 150 tons, sanitation department garage; bids close Sept. 3, Department of Sanitation, New York.

Montour Falls, N. Y., 200 tons, Pennsylvania Railroad grade elimination.

Detroit, 2400 tons, city sewage treatment plant, S. A. Healy Co., Chicago, contractor.

Manitowoc, Wis., 375 tons, Wisconsin Maltng Co.

West Allis, Wis., 275 tons, Allis-Chalmers Mfg. Co.

Petaluma, Cal., 600 tons, warehouse and feed mills; bids Sept. 2.

Sacramento, Cal., 344 tons, overhead crossing; bids soon.

Dinuba, Cal., 225 tons, Union High School; bids soon.



... CLEVELAND ...

... *Sheet and strip orders from automobile industry gain.*

... ..

... *August ore movement a record; steel scrap off 50c. a ton.*

CLEVELAND, Aug. 31.—Ingot output in the Cleveland-Lorain district dropped two points this week to 77 per cent of capacity. In the Youngstown district it gained one point to 81 per cent of capacity.

New demand from the motor car industry was increased during the week by the placing of fair-sized sheet orders by the Fisher Body plant of General Motors and some new buying of strip steel by automobile parts makers. With the exception of a gain in tonnage from this industry, the volume of business in finished steel shows little change from the previous week. Releases to forge shops and stamping plants for parts or new models of automobiles are being held back, resulting in a limited volume of specifications from these sources.

Business in finished steel in August shows a moderate gain over July, due to a pick-up in orders during the latter part of this month. However, this gain has not made much headway. Many miscellaneous consumers still have considerable steel in stock that they purchased during the second quarter when, because of far extended deliveries, they wanted to make sure that they would have the material when needed.

The delivery situation has ceased to be a factor as fairly prompt shipments can now be secured on nearly all products except galvanized sheets and plates, and backlogs of these products are being reduced.

Semi-finished steel is in good demand, consumers evidently anticipating their requirements in order to avoid the possibility of delayed deliveries should the expected increase in demand materialize later in the year.

Little new steel tonnage is coming out at present for construction work. Early in the year there were many industrial building projects, mostly small, but in the aggregate calling for considerable tonnage. Not only has demand for private building subsided, but there is little new public work.

Scrap, which advanced sharply with a recent Youngstown district purchase, has declined 50c. a ton.

Pig Iron

While some sales are being made for the fourth quarter, the moderate spurt in buying for that delivery that developed after the re-establishment of prices has subsided. Many foundries will carry over enough iron to last well into the coming quarter. Some see no incentive to buying at this time and others, particularly foundries making automobile castings, are deferring purchases until they know their requirements for the quarter. Some of the foundries doing automotive work have closed contracts for castings but have not yet secured releases. Shipments are holding up well to agricultural implement foundries but there is a seasonal slowing down in the demand from makers of heating equipment.

Bars, Plates and Shapes

While some new tonnage is coming out, the demand for hot rolled bars continues rather light. Some forge shops that recently placed orders for steel for automobile parts are withholding releases, as they have not yet secured releases from their own customers. Mills need business to maintain present rolling schedules and can make shipments in two weeks or less. Demand for structural shapes and

plates is also light. Shape deliveries are promised in two weeks. There is very little activity in the construction field, the only sizable award being for 325 tons for a building in Newark, Ohio, for the Owens-Illinois Glass Co., taken by the Indiana Bridge Co. Reinforcing bar business is confined to small lots and considerable irregularity is reported in distributors' prices.

Sheets and Strip

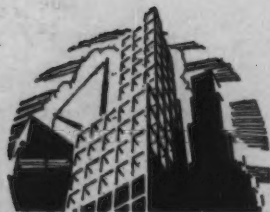
The volume of new business in sheets from the motor car industry gained the past week, during which substantial lots were purchased by Fisher Body plants of General Motors. However, fresh orders from other sources continue rather light. Many consumers, including some of the manufacturers of stoves, refrigerators and metal partitions, still have good stocks that were purchased when deliveries were far extended. Little new business is coming from stamping plants making automobile parts in this territory. Deliveries are around normal or in three weeks on most grades except wide hot and cold rolled sheets, on which deliveries in four weeks are promised. Strip steel shows some improvement, mostly in the hot rolled material, due to a revival in orders from motor car parts plants and also to new orders from local plants doing automotive work.

Iron Ore

A record-breaking water movement of more than 11,000,000 tons of Lake Superior ore is indicated for August with shipments tabulated up to the last two or three days of the month. The largest water movement in any previous year was in 1929 when 10,806,967 tons were shipped. With shipments up to Aug. 1 amounting to 34,627,751 tons, the movement to Sept. 1 will be over 45,600,000 tons as compared with the previous season's record until that date in 1929 when the water movement up to Sept. 1 was 43,717,787 tons. Another cargo-breaking record, the third to be established this season, was made the past week when the freighter *Harry Coulby* of the Interlake Steamship Line took 15,529 tons of ore to Indiana Harbor.

Bolts and Nuts

Present bolt and nut prices have been reaffirmed for the fourth quarter except on stove bolts and machine screws in packages on which a 5 per cent advance is being considered. New business is coming from the motor car manufacturers whose requirements are largely special bolts and prices have been advanced on some of these items.



...NEW YORK...

... August business shows slight improvement, if any, over July.

o o o

... Sellers look for betterment in buying before end of September.

o o o

... Export trade in a lull, particularly with Japan.

NEW YORK, Aug. 31.—There has been no decided upward trend in steel business during August. Some companies report that their sales in the past month were slightly better than in July, while with others the reverse is true, depending to some extent on the character of products that the various mills roll. Regardless of tonnage, the atmosphere of the market is one of dullness, which, of course, is not unusual for the most popular vacation month of the year.

The general situation, however, is strongly characterized by the fact that shipments are going for-

ward without interruption, indicating a high rate of consumption in some instances and a willingness in other cases to put steel into stock without fear of the future. While fall demand may be a little slower in getting started than would be the case if production had not held at such a high level throughout the summer, there is a general expectation among steel sellers that a decided change for the better will be apparent before the end of September. Just how strong a demand will develop this fall seems to be a matter of conjecture rather than of conviction among steel sellers. In other

words, they are awaiting developments.

Export prospects would appear to be promising in view of the sold-up condition of British and German mills, but at the moment there is a lull, especially noticeable in Japanese trade. Many Japanese inquiries are pending, but action is deferred either until the outcome of the Chinese-Japanese situation is more clearly outlined or until Japan can make adequate exchange arrangements here. During the past few months American mills have accepted some business with the understanding that processing will not be started until credits have been established in New York banks.

Pig Iron

The two weeks preceding Labor Day are customarily dull weeks in this market and this year is no exception. The domestic market is very quiet so far as new business is concerned, but shipments against contracts are going forward in heavy volume without interruption. Although foundry activity in this district is essentially unchanged from the previous week, substantial order books have been built up in several lines, particularly the textile machinery field, and generally an optimistic attitude prevails toward fall prospects. Inquiries from abroad at present are in small number and vary from 20 to 3000-ton lots. The only feature of the currently dormant export market is the reappearance of inquiries for "in between" analyses.



... Dominion mills getting good export orders.

TORONTO, Aug. 31.—Inquiries for materials are improving. It is expected that additional business will be forthcoming from the railroads and other large consumers of iron and steel.

H. J. Kelley, first vice-president of Dominion Steel & Coal Corp., on a visit to Toronto, stated in an interview that his company still is receiving good repeat orders for rails on a competitive basis from South Africa, which is a helpful influence in maintaining operations at the Sydney plant. Steel orders from Great Britain also continue in encouraging volume. German

importers of iron ore from the company's Wabana, Newfoundland, mines, are taking much greater advantage of their contract to purchase Wabana's output than was true during the depression years.

Referring to the plants recently acquired by Dominion Steel in Ontario, Mr. Kelley stated that it is a little premature to discuss the date on which the Ojibway properties will be placed in operation. Later advice from Montreal is to the effect that Dominion Steel & Coal Corp. has acquired through stock purchase the plant and assets of Graham Nail & Wire Products, Ltd., Toronto, and Dominion Steel will take control Sept. 1. A. Cross, president of Dominion Steel, states that there is no connection between the Graham Nail deal and the earlier purchase of Canadian Steel Corp., and Canadian Steel Lands, Ltd., Ojibway; Canadian Bridge Co., Walkerville, and the Essex Terminal Railway Co. He states it was just a good opportunity for expansion. The Graham company

distributes wire and flat steel products, for which raw materials from Dominion Steel's Sydney, N. S., works are used.

Merchant pig iron sales are being maintained at their former rate of around 1500 tons weekly, while inquiries are appearing from melters that are preparing for early increase in the daily melt.

Some scrap dealers have announced higher buying prices. It is stated that scrap offerings are not keeping pace with demand and there has been some active bidding for desirable lots recently. Cast scrap has become quite scarce, and local dealers state that they are unable to import materials from the United States owing to the higher prices quoted across the line.

The date fixed for the expiration of the subscription warrants for the purchase of bonds and common stock of Follansbee Steel Corp. has been extended from Aug. 30 to Sept. 27 by court order.



...NON-FERROUS...

... Copper prices in London continue downward trend.

... Lead sales improve slightly.

... Tin market quiet; prices down slightly.

NEW YORK, Aug. 31.—Price quotations abroad continued their downward trend during the week, and today the red metal was quoted at 13.75c. per lb., c.i.f., usual Continental base ports. This quotation represents a decline

of 0.17c. from last week's low, and 1.15c. from the price level of two weeks ago. Domestic sales are in moderate volume and involve mostly November deliveries to company-owned fabricators. Copper sales for the month, through Saturday,

totalled 65,269 tons. Quotations are unchanged at 14c. per lb., Connecticut Valley, for the electrolytic grade.

Lead

With the opening of October order books, the process of accommodating a large waiting list boosted sales to a high rate for several days, but the continued decline of the London market has dampened consumer enthusiasm considerably and current sales are back to the normal level of the past several weeks. Although foreign metal today is quoted at 4.80c. per lb., London, it would be necessary for it to drop a good bit more before the import duty of 2.125c. per lb. could be overcome and importing made profitable. The price level of 6.50c. per lb., New York, is maintained on all domestic sales.

Zinc

The position of the market remains unaltered and sales for prompt delivery are still governed by available supplies, which are disposed of as soon as they appear, at the firm level of 7.60c. per lb., New York. Spelter abroad was quoted at 5.10c. this morning. Sales of prime Western for the week totalled 2415 tons, and deliveries amounted to 5339 tons. Undelivered stocks were lowered for the first time in many weeks and now stand at 97,760 tons.

Tin

A drop of 0.625c. per lb. in quotations on Thursday sponsored a spurt in buying activity in the morning, but the general softness of the market, together with the depressing effect of the declining European price levels, leveled off the demand in the afternoon and the market has been uneventful since. The general trend of prices during the week was downward, with the low point being touched yesterday at 58.25c. Today quotations moved upward a half cent to 58.75c. for Straits metal in New York. Recent developments in the Far East crisis have weakened the market in London, and the decline which started three weeks ago has continued. On first call in London today, prompt metal was quoted at £266 5s., and future at £260.

August Averages

The average prices of the major nonferrous metals in August, based on the daily quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, Conn. Valley 14.00c. per lb.
Lake copper, Eastern delivery 14.125c. per lb.
Straits tin, spot, New York 59.40c. per lb.
Zinc, East St. Louis 7.212c. per lb.
Zinc, New York 7.562c. per lb.
Lead, St. Louis 6.302c. per lb.
Lead, New York 6.452c. per lb.

The Week's Prices. Cents Per Pound for Early Delivery

	Aug. 25	Aug. 26	Aug. 27	Aug. 28	Aug. 30	Aug. 31
Electrolytic copper, Conn.*	14.00	14.00	14.00	14.00	14.00	14.00
Lake copper, N. Y.	14.125	14.125	14.125	14.125	14.125	14.125
Straits tin, spot, New York	59.125	58.50	58.50	58.50	58.25	58.75
Zinc, East St. Louis	7.25	7.25	7.25	7.25	7.25	7.25
Zinc, New York	7.60	7.60	7.60	7.60	7.60	7.60
Lead, St. Louis	6.35	6.35	6.35	6.35	6.35	6.35
Lead, New York	6.50	6.50	6.50	6.50	6.50	6.50

*Delivered Connecticut Valley; price ¼c. lower delivered in New York.
Aluminum, virgin 99 per cent plus 20.00c.-21.00c. a lb., delivered.
Aluminum No. 12 remelt No. 2 standard, in carloads, 19.00c. to 19.50c. a lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 17.00c. a lb., prompt, f.o.b., New York.
Quicksilver, \$92.00 to \$93.00 per flask of 76 lb.
Brass ingots, commercial 85-5-5, 14.25c. a lb., less carload, delivered; in Middle West ¼c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig ...	59.75c. to 60.75c.
Tin, bar ...	61.75c. to 62.75c.
Copper, Lake ...	15.00c. to 16.00c.
Copper, electrolytic ...	15.00c. to 16.00c.
Copper, castings ...	14.75c. to 15.75c.
*Copper sheets, hot-rolled ...	21.78c.
*High brass sheets ...	19.75c.
*Seamless brass tubes ...	22.50c.
*Seamless copper tubes ...	22.625c.
*Brass rods ...	16.25c.
Zinc, slabs ...	8.75c. to 9.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over ...	13.00c.
Lead, American pig ...	7.50c. to 8.50c.
Lead, bar ...	8.50c. to 9.50c.
Lead, sheets, cut ...	10.00c.
Antimony, Asiatic ...	18.00c. to 19.00c.
Alum., virgin, 99 per cent plus ...	22.50c. to 24.00c.
Alum., No. 1 for remelting, 98 to 99 per cent ...	19.50c. to 21.00c.
Solder, ½ and ¾ ...	35.00c. to 36.00c.
Babbitt metal, commercial grade ...	25.00c. to 65.00c.

*These prices, which are also for delivery from Chicago and Cleveland warehouses, are quoted with 33¼ per cent allowed off for extras, except copper tubes and brass rods, on which allowance is 40 per cent.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig ...	62.50c.
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Tin, bar ...	64.50c.
Copper, Lake ...	15.00c. to 15.25c.
Copper, electrolytic ...	15.00c. to 15.25c.
Copper, castings ...	14.75c. to 15.00c.
Zinc, slabs ...	8.75c. to 9.00c.
Lead, American pig ...	7.00c. to 7.25c.
Lead, bar ...	10.50c. to 11.00c.
Antimony, Asiatic ...	17.88c.
Babbitt metal, medium grade ...	25.50c.
Babbitt metal, high grade ...	66.50c.
Solder, ½ and ¾ ...	39.50c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible ...	10.875c.	11.625c.
Copper, hvy. and wire ...	10.25c.	10.75c.
Copper, light and bottoms ...	9.25c.	9.50c.
Brass, heavy ...	6.25c.	6.875c.
Brass, light ...	5.125c.	5.875c.
Hvy. machine composition ...	9.125c.	9.625c.
No. 1 yel. brass turnings ...	7.50c.	8.00c.
No. 1 red brass or compos. turnings ...	8.875c.	9.375c.
Lead, heavy ...	5.125c.	5.50c.
Cast aluminum ...	12.125c.	13.25c.
Sheet aluminum ...	13.25c.	14.75c.
Zinc ...	4.00c.	4.375c.



IRON AND STEEL SCRAP

OWING to suspensions of shipments by some of the larger steel companies and possibly also because of the fear that the Chinese-Japanese war situation may result in an embargo on shipments of steel scrap to that country, scrap markets in all sections have developed a weaker tendency after an advance that has carried prices substantially above their lows of June. No. 1 heavy melting steel has declined 75c. a ton at Chicago, 50c. at Pittsburgh and is unchanged at Philadelphia, being strengthened there by export buying. THE IRON AGE composite price has declined to \$20.17 from \$20.58 a week ago.

Scrap brokers hold the opinion that the present weakness is merely a halt in the upward trend of prices and that the advance will be resumed as soon as new steel business has appeared in larger volume. An opposite view held in some quarters is that some of the steel companies have estimated that the fall expansion in business will not be as large as was expected up to a few weeks ago, and, if this is true, they will not need as much scrap.

Pittsburgh

The market presents a somewhat softer tone than a week ago, due probably to nearby closing of railroad lists and the fact that the leading producer has held up shipments to all of its plants. In fact, the market in the past week has practically been without activity on either the part of consumers or dealers. Some brokers claim they are able to pick up scrap at \$21 a ton, while others indicate they must pay at least \$21.50. Successful bids on the railroad lists will probably do much towards clarifying the present situation. Meanwhile, No. 1 heavy melting steel is nominally quoted this week at \$21.50 to \$22, off 50c. from last week's quotation. Other open-hearth grades are down sympathetically.

Chicago

Although no mill sales have been reported since that of last week at \$20, the market has turned definitely downward and, on the basis of lower brokers' bids, No. 1 steel is quoted 75c. lower at \$18.75 to \$19.25. Mills appear satisfied and not in great need of additional supplies soon. Material is plentiful, but the market does not seem to be flooded. Several railroads, including the Burlington, Alton and Wabash,

have lists out, and some railroad steel is said to have sold last week for \$19.25, the lowest for some time.

Cleveland

Lack of new buying and plentiful supplies of scrap have resulted in a weakening of the market, with declines of 50c. a ton on both steel and blast furnace grades in both the Cleveland and Youngstown districts. Dealers are offering \$20 to \$20.50 for No. 1 heavy melting steel for Youngstown delivery, or about \$1 a ton less than a week ago. New York Central Railroad will take bids Sept. 2 on a list that includes 5000 tons of heavy melting steel; the Erie will receive bids Sept. 2 and the Nickel Plate Sept. 3. Michigan automobile companies have issued September scrap lists, but the tonnage offered is quite small.

Buffalo

With sales of sizable tonnages of No. 1 heavy melting steel at \$20 and No. 2 heavy melting steel at \$18, the market has softened considerably since the previous large transaction. An important interest, after buying an extensive tonnage at \$20.50 to \$21, has successively lowered its offering price to \$20.50 and \$20. At these prices it is successful in getting considerable material. The softened outside markets, along with a possibility that the Government may embargo scrap shipments to Japan, is believed to have brought about the weaker feeling.

Boston

With a slightly easier feeling in Pittsburgh, Weirton interests withdrawing from the market, and shipments of steel turnings held up, the scrap market has come almost to a standstill. New England foundries continue to take machinery cast quite freely, paying \$18 to \$19 a ton, delivered, for best grades. Export prices hold up strongly, although the market is less active. Most of the shipments are going to England and Italy.

New York

Bethlehem continues to be the only domestic consumer moderately interested in scrap from this area, and the hesitancy of all other mills is reflected in a general undertone of uncertainty here. As is always the case, this type of sentiment has brought forth quite a flow of material, more than enough to satisfy all export needs of the moment. Although brokers in several instances paid well over \$17 for No. 1 steel a week or so ago, alongside barges, subsequent easiness has made a \$17 level far the most representative for the

time being. Three boats are now loading here for Europe, and even more material would be moving on old orders if it were not for the scarcity of boats. On the other hand, Japanese boats are more plentiful, but unfortunately, deliveries on the few old orders currently on brokers' books are being delayed. Most sellers do not look for Japan to exert much influence on the situation here for at least several more months.

Cincinnati

Mill withdrawal from the market and reported embargoes in other areas weakened the district market sharply the past week. Dealers' bids on all items have been reduced 50c. to \$1.50, with activity limited to needs.

St. Louis

The advance in the scrap iron and steel market has come to a definite halt. Dealer offerings have increased considerably. The movement of country scrap has broadened, with completion of the wheat harvest. The edge is off of the outside demand, particularly in the case of Chicago, and the out-bound movement is the smallest in a number of weeks.

Detroit

Mixed trends are making appearances in the Detroit scrap market. The general tone is considerably weaker, but electric furnace material is holding the level it struck several weeks ago. Sheet clippings and bundles are among the items that have shown enough strength to justify their present quotations. Heavy melting steel borings and turnings are definitely off. Scrap production is at lowest point of year, with Chrysler not scheduled to turn out any until September. Thirteen General Motors units face similar prospects. It is reported that attempts to substitute lower bids on the Packard list met with failure. When bids finally were closed they were about a week behind schedule. On the Chrysler list closed last week prices were 25c. to 50c. lower than a month ago.

Philadelphia

Sentiment in this area is definitely on the easy side, although so far there have not been enough test sales to indicate whether prices are actually going to fade away to any extent. The nervousness of the market is a direct reflection of the uncertainty now existing among steel sellers as regards the possible course of orders after Labor Day. If consumer demands are healthy by the middle of September, quite likely scrap prices will be maintained or even advanced; if not, price declines for scrap are to be expected. Shipments on old orders are going forward to practically all district consumers, but there has been no new buying of any moment. Bethlehem is picking up lots of No. 1 for Bethlehem and Steelton at \$18.50 and \$19, and No. 2 at price levels \$1.50 lower. For some time this area has ignored export entirely, and most likely foreign buying will have little influence here over the remainder of the year.

Iron and Steel Scrap Prices

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. mtng. steel.	\$21.50 to \$22.00
Railroad hvy. mtng.	23.00 to 23.50
No. 2 hvy. mtng. steel.	19.00 to 19.50
No. 2 RR. wrought.	21.50 to 22.00
Scrap rails	23.00 to 23.50
Rails 3 ft. and under.	25.50 to 26.00
Comp. sheet steel	21.50 to 22.00
Hand bundled sheets.	19.50 to 20.00
Hvy. steel axle turn.	19.50 to 20.00
Machine shop turn.	15.50 to 16.00
Short shov. turn.	15.50 to 16.00
Mixed bor. & turn.	15.50 to 16.00
Cast iron borings	15.50 to 16.00
Cast iron carwheels.	20.50 to 21.00
Hvy. breakable cast.	17.50 to 18.00
No. 1 cupola cast.	20.00 to 20.50
RR. knuckles & cplrs.	27.00 to 27.50
Rail coil & leaf springs	27.00 to 27.50
Rolled steel wheels.	27.00 to 27.50
Low phos. billet crops.	27.00 to 27.50
Low phos. sh. bar.	26.00 to 26.50
Low phos. punchings.	24.00 to 24.50
Low phos. plate, hvy.	25.50 to 26.00
Low phos. plate clips.	24.00 to 24.50
Steel car axles	27.00 to 27.50

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. mtng. steel.	\$19.50 to \$20.00
No. 2 hvy. mtng. steel.	17.50 to 18.00
Hydraulic bund., new.	19.00 to 19.50
Hydraulic bund., old.	15.50 to 16.00
Steel rails for rolling.	23.00 to 23.50
Cast iron carwheels.	20.50 to 21.00
Hvy. breakable cast.	19.00 to 19.50
No. 1 cast.	21.00 to 21.50
Stove plate (steel wks.)	16.50 to 17.00
Railroad malleable	20.00 to 21.00
Machine shop turn.	14.00 to 14.50
No. 1 blast furnace	13.50 to 14.00
Cast borings	13.50 to 14.00
Heavy axle turnings.	16.00 to 16.50
No. 1 low phos. hvy.	24.50 to 25.00
Couplers & knuckles.	25.50 to 26.00
Rolled steel wheels.	25.50 to 26.00
Steel axles	29.00 to 29.50
Shafting	24.00 to 24.50
No. 1 RR. wrought	20.50 to 21.00
Spec. iron & steel pipe	16.50 to 17.00
No. 1 forge fire	17.00 to 17.50
Cast borings (chem.)	14.50 to 15.00

CHICAGO

Delivered to Chicago district consumers:

Hvy. mtng. steel.	Per Gross Ton \$18.75 to \$19.25
Auto. hvy. mtng. steel.	
alloy free	17.00 to 17.50
No. 2 auto. steel	15.00 to 15.50
Shoveling steel	18.50 to 19.00
Hydraul. comp. sheets.	17.75 to 18.25
Drop forge flashings.	15.50 to 16.00
No. 1 busheling	17.50 to 18.00
Rolled carwheels	22.50 to 23.00
Railroad tires, cut.	22.00 to 22.50
Railroad leaf springs.	22.00 to 22.50
Steel coup. & knuckles	21.50 to 22.00
Axle turnings	17.50 to 18.00
Coil springs	23.50 to 24.00
Axle turn. (elec.)	18.50 to 19.00
Low phos. punchings.	22.00 to 22.50
Low phos. plates, 12 in. and under	21.50 to 22.00
Cast iron borings	11.50 to 12.00
Short shov. turnings.	12.00 to 12.50
Machine shop turn.	10.00 to 10.50
Rerolling rails	21.50 to 22.00
Steel rails under 3 ft.	21.50 to 22.00
Steel rails under 2 ft.	22.00 to 22.50
Angle bars, steel	21.50 to 22.00
Cast iron carwheels	19.50 to 20.00
Railroad malleable	19.50 to 20.00
Agric. malleable	16.50 to 17.00

Per Net Ton

Iron car axles	\$26.00 to \$26.50
Steel car axles	26.00 to 26.50
No. 1 RR. wrought	16.00 to 16.50
No. 2 RR. wrought	16.50 to 17.00
No. 2 busheling, old.	9.00 to 9.50
Locomotive tires	19.00 to 19.50
Pipes and flues	13.50 to 14.00
No. 1 machinery cast.	15.00 to 15.50
Clean auto. cast.	15.00 to 15.50
No. 1 railroad cast.	14.50 to 15.00
No. 1 agric. cast.	13.50 to 14.00
Stove plate	12.00 to 12.50
Grate bars	12.50 to 13.00
Brake shoes	12.50 to 13.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. mtng. steel.	\$20.50 to \$21.00
Hydraulic bundles	19.50 to 20.00
Machine shop turn.	15.00 to 15.50

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. mtng. steel.	\$19.50 to \$20.00
No. 2 hvy. mtng. steel.	18.50 to 19.00
Comp. sheet steel	19.00 to 19.50
Light bund. stampings.	15.50 to 16.00
Drop forge flashings.	18.00 to 18.50
Machine shop turn.	12.50 to 13.00
Short shov. turn.	12.50 to 13.00
No. 1 busheling	18.50 to 19.00
Steel axle turnings.	15.50 to 16.00
Low phos. billet and bloom crops	25.50 to 26.00
Cast iron borings	14.00 to 14.50
Mixed bor. & turn.	14.00 to 14.50
No. 2 busheling	13.00 to 13.50
No. 1 cast.	19.00 to 19.50
Railroad grate bars.	11.50 to 12.00
Stove plate	11.00 to 11.50
Rails under 3 ft.	24.00 to 24.50
Rails for rollings	21.00 to 21.50
Railroad malleable	22.00 to 22.50
Cast iron carwheels.	21.50

BUFFALO

Per gross ton, f.o.b. consumers' plants:

No. 1 hvy. mtng. steel.	\$20.00 to \$20.50
No. 2 hvy. mtng. steel.	18.00 to 18.50
Scrap rails	20.00 to 20.50
New hvy. b'nd'ed sheet	18.00 to 18.50
Old hydraulic bundles.	17.00 to 17.50
Drop forge flashings	18.00 to 18.50
No. 1 busheling	18.00 to 18.50
Hvy. axle turnings	15.00 to 15.50
Machine shop turn.	12.50 to 13.00
Knuckles & couplers.	22.00 to 22.50
Coil & leaf springs.	22.00 to 22.50
Rolled steel wheels.	22.00 to 22.50
Low phos. billet crops.	22.00 to 22.50
Shov. turnings	14.50 to 15.00
Mixed bor. & turn.	13.00 to 13.50
Cast iron borings	13.00 to 13.50
Steel car axles	21.00 to 21.50
No. 1 machinery cast.	19.50 to 20.00
No. 1 cupola cast.	18.00 to 18.50
Stove plate	16.00 to 16.50
Steel rails under 3 ft.	23.00 to 24.00
Cast iron carwheels.	17.00 to 17.50
Railroad malleable	20.50 to 21.00
Chemical borings	14.00 to 14.50

ST. LOUIS

Dealer's buying prices per gross ton delivered to consumer:

Selected hvy. metal.	\$17.25 to \$17.50
No. 1 hvy. melting.	16.75 to 17.25
No. 2 hvy. melting.	15.50 to 16.00
No. 1 locomotive tires.	19.00 to 19.50
Misc. stand.-sec. rails.	18.00 to 18.50
Railroad springs	21.00 to 21.50
Bundled sheets	13.00 to 13.50
No. 2 RR. wrought	16.75 to 17.25
No. 1 busheling	12.00 to 12.50
Cast bor. & turn.	8.50 to 9.00
Rails for rolling	19.50 to 20.00
Machine shop turn.	9.00 to 9.50
Heavy turnings	13.50 to 14.00
Steel car axles	23.50 to 24.00
Iron car axles	24.00 to 24.50
No. 1 RR. wrought	15.00 to 15.50
Steel rails under 3 ft.	20.00 to 20.50
Steel angle bars	19.00 to 19.50
Cast iron carwheels.	18.00 to 18.50
No. 1 machinery cast.	14.00 to 14.50
Railroad malleable	19.50 to 20.00
No. 1 railroad cast.	14.00 to 14.50
Stove plate	12.50 to 13.00
Agricul. malleable	12.50 to 13.00
Grate bars	12.00 to 12.50
Brake shoes	12.00 to 12.50

CINCINNATI

Dealer's buying prices per gross ton:

No. 1 hvy. mtng. steel.	\$17.50 to \$18.00
No. 2 hvy. mtng. steel.	14.50 to 15.00
Scrap rails for mtng.	20.00 to 20.50
Loose sheet clippings.	12.50 to 13.00
Hydraul. b'nd'ed sheets	16.00 to 16.50
Cast iron borings	10.00 to 10.50
Machine shop turn.	10.50 to 11.00
No. 1 busheling	14.50 to 15.00
No. 2 busheling	8.00 to 8.50
Rails for rolling	22.50 to 23.00
No. 1 locomotive tires.	19.00 to 19.50
Short rails	23.00 to 23.50
Cast iron carwheels.	17.00 to 17.50
No. 1 machinery cast.	15.50 to 16.00
No. 1 railroad cast.	14.50 to 15.00
Burnt cast.	11.00 to 11.50
Stove plate	11.00 to 11.50
Agricul. malleable	17.50 to 18.00
Railroad malleable	19.50 to 20.00
Mixed hvy. cast.	13.00 to 13.50

BIRMINGHAM

Per gross ton delivered to consumer:

Hvy. melting steel	\$16.00 to \$16.50
Scrap steel rails	17.00
Short shov. turnings.	9.00 to 10.00
Stove plate	10.00
Steel axles	18.00 to 19.00
Iron axles	16.50 to 18.00
No. 1 RR. wrought.	13.00 to 15.00
Rails for rolling	18.00 to 20.00
No. 1 cast	16.00 to 18.00
Tramcar wheels	16.00 to 18.00

DETROIT

Dealers' buying prices per gross ton:

No. 1 hvy. mtng. steel.	\$17.00 to \$17.50
No. 2 hvy. mtng. steel.	16.00 to 16.50
Borings and turnings.	13.00 to 13.50
Long turnings	12.00 to 12.50
Short shov. turnings.	14.00 to 14.50
No. 1 machinery cast.	16.00 to 16.50
Automotive cast.	16.75 to 17.25
Hydraul. comp. sheets.	18.50 to 19.00
Stove plate	10.50 to 11.00
New factory bushel.	17.00 to 17.50
Old No. 2 busheling.	11.50 to 12.00
No. 2 busheling (black fender stock)	14.25 to 14.75
Sheet clippings	13.50 to 14.00
Flashings	16.25 to 16.75
Low phos. plate scrap.	18.50 to 19.00

NEW YORK

Dealers' buying prices per gross ton:

No. 1 hvy. mtng. steel.	\$16.00 to \$17.00
No. 2 hvy. mtng. steel.	14.50 to 15.50
Hvy. breakable cast.	15.00 to 15.50
No. 1 machinery cast.	15.50 to 16.00
No. 2 cast.	14.50 to 15.00
Stove plate	12.00 to 12.50
Steel car axles	27.00 to 27.50
Shafting	19.50 to 20.00
No. 1 RR. wrought.	17.50 to 18.00
No. 1 wrought long.	16.50 to 17.00
Spec. iron & steel pipe.	13.00 to 13.50
Rails for rolling	19.00 to 19.50
Clean steel turnings	10.00 to 10.50
Cast borings	9.00 to 9.50
No. 1 blast furnace	9.00 to 9.50
Cast borings (chem.)	12.50 to 13.00
Unprepar. yard scrap.	11.00 to 12.00

Per gross ton, delivered local foundries:

No. 1 machn. cast.	\$17.50 to \$18.50
No. 1 hvy. cast cupola.	14.50 to 15.00
No. 2 cast	14.00 to 14.50

BOSTON

Dealers' buying prices per gross ton:

No. 1 hvy. mtng. steel.	\$15.30 to \$16.30
Scrap rails	16.00 to 16.50
No. 2 steel	14.80 to 15.30
Breakable cast	15.00 to 15.10
Machine shop turn.	9.80 to 10.00
Mixed bor. & turn.	9.80 to 10.50
Bund. skeleton long.	13.25 to 13.30
Shafting	19.00 to 19.50
Cast bor. chemical.	9.00 to 10.00

Per gross ton delivered consumers' yards:

Textile cast.	\$13.00 to \$13.50
No. 1 machine cast.	18.00 to 19.00

CANADA

Dealers' buying prices at their yards, per gross ton

	Toronto	Montreal
No. 1 hvy. mtng. stl.	\$14.50	\$14.00
No. 2 hvy. mtng. stl.	13.50	13.00
Mixed dealers steel.	12.50	12.00
Scrap pipe	11.75	11.50
Steel turnings	9.75	9.50
Cast borings	11.00	10.50
Machinery cast.	18.00	17.00
Dealers cast.	16.00	15.00
Stove plate	13.00	11.00

EXPORT

Dealers' buying prices per gross ton:

New York, truck lots, delivered, barges.

No. 1 hvy. mtng. steel.	\$17.00
No. 2 hvy. mtng. steel.	16.00
No. 2 cast.	\$14.50 to 15.00
Stove plate	12.50 to 13.00

Boston on cars at Army Base or Mystic Wharf

No. 1 hvy. mtng. steel.	\$18.25 to \$18.50
No. 2 hvy. mtng. steel.	17.25 to 17.50
Rails (scrap)	18.00

Philadelphia, delivered alongside boats, Port Richmond

No market at present.

PRICES ON FINISHED AND SEMI-FINISHED IRON AND STEEL

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham. Prices at Duluth are \$2 a ton higher, and delivered Detroit \$3 higher.

Per Gross Ton

Rerolling \$37.00
Forging quality 43.00

Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton

Open-hearth or Besse-mer \$37.00

Skelp

F.o.b. Pittsburgh, Chicago, Youngstown, Buffalo, Coatesville, Pa., Sparrows Point, Md.

Per Lb.

Grooved, universal and sheared 2.10c.

Wire Rods

(No. 5 to 9/32 in.)

Per Gross Ton

F.o.b. Pittsburgh or Cleveland \$47.00
F.o.b. Chicago, Youngstown or Anderson, Ind. 48.00
F.o.b. Worcester, Mass. 49.00
F.o.b. Birmingham 50.00
F.o.b. San Francisco 56.00
F.o.b. Galveston 53.00
Rods over 9/32 in. to 47/64 in., inclusive, \$5 a ton over base.

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel

Base per Lb.

F.o.b. Pittsburgh 2.45c.
F.o.b. Chicago or Gary 2.50c.
F.o.b. Duluth 2.60c.
Del'd Detroit 2.60c.
F.o.b. Cleveland 2.60c.
F.o.b. Buffalo 2.55c.
Del'd Philadelphia 2.74c.
Del'd New York 2.78c.
F.o.b. Birmingham 2.60c.
F.o.b. cars dock Gulf ports 2.85c.
F.o.b. cars dock Pacific ports 3.00c.

Rail Steel

(For merchant trade)

F.o.b. Pittsburgh 2.30c.
F.o.b. Cleveland, Chicago, Gary or Moline, Ill. 2.35c.
F.o.b. Buffalo 2.40c.
F.o.b. Birmingham 2.45c.
F.o.b. cars dock Gulf ports 2.70c.
F.o.b. cars dock Pacific ports 2.85c.

Billet Steel Reinforcing (Straight lengths as quoted by distributors)

F.o.b. Pittsburgh 2.55c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham 2.60c.
Del'd Detroit 2.70c.
F.o.b. cars dock Gulf ports 2.95c.
F.o.b. cars dock Pacific ports 2.95c.

Rail Steel Reinforcing (Straight lengths as quoted by distributors)

F.o.b. Pittsburgh 2.40c.
F.o.b. Buffalo, Cleveland, Youngstown, Chicago, Gary or Birmingham 2.45c.
F.o.b. cars dock Gulf ports 2.30c.
F.o.b. cars dock Pacific ports 2.80c.

Iron

F.o.b. Chicago 2.40c.
F.o.b. Pittsburgh (refined) 3.60c.

Cold Finished Bars and Shafting*

Base per Lb.

F.o.b. Pittsburgh 2.90c.
F.o.b. Cleveland, Chicago and Gary 2.95c.
F.o.b. Buffalo 3.00c.
F.o.b. Detroit 2.95c.

* In quantities of 10,000 to 10,999 lb.

Plates

Base per Lb.

F.o.b. Pittsburgh 2.25c.
F.o.b. Chicago or Gary 2.30c.
Del'd Cleveland 2.435c.
F.o.b. Coatesville or Spar. Pt. 2.35c.
Del'd Philadelphia 2.435c.
Del'd New York 2.53c.
F.o.b. Birmingham 2.40c.

F.o.b. cars dock Gulf ports 2.65c.
F.o.b. cars dock Pacific ports 2.80c.
Wrought iron plates, f.o.b. Pittsburgh 3.80c.

Floor Plates

F.o.b. Pittsburgh 3.50c.
F.o.b. Chicago 3.55c.
F.o.b. Coatesville 3.60c.
F.o.b. cars dock Gulf ports 3.90c.
F.o.b. cars dock Pacific ports 4.05c.

Structural Shapes

Base per Lb.

F.o.b. Pittsburgh 2.35c.
F.o.b. Chicago 2.30c.
Del'd Cleveland 2.435c.
F.o.b. Buffalo or Bethlehem 2.35c.
Del'd Philadelphia 2.455c.
Del'd New York 2.5025c.
F.o.b. Birmingham (standard) 2.40c.
F.o.b. cars dock Gulf ports 2.65c.
F.o.b. cars dock Pacific ports 2.80c.

Steel Sheet Piling

Base per Lb.

F.o.b. Pittsburgh 2.60c.
F.o.b. Chicago or Buffalo 2.70c.
F.o.b. cars dock Gulf or Pacific Coast ports 3.05c.

RAILS AND TRACK SUPPLIES

F.o.b. Mill

Standard rails, heavier than 60 lb., per gross ton \$42.50
Angle bars, per 100 lb. 2.80

F.o.b. Basing Points

Light rails (from billets) per gross ton \$43.00
Light rails (from rail steel) per gross ton 42.00

Base per Lb.

Spikes 3.15c.
Tie plates, steel 2.30c.
Tie plates, Pacific Coast ports 2.40c.
Track bolts, to steam railroads 4.35c.
Track bolts, to jobbers, all sizes (per 100 counts) 65-5 per cent off list

Basing points on light rails are Pittsburgh, Chicago and Birmingham; on spikes and tie plates, Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minneapolis, Colo., Birmingham and Pacific Coast ports; on tie plates alone, Steelton, Pa.; Buffalo; on spikes alone, Youngstown, Lebanon, Pa., Richmond, Va.

SHEETS, STRIP, TIN PLATE TERNE PLATE

Sheets

Hot Rolled

Base per Lb.

No. 10, f.o.b. Pittsburgh 2.40c.
No. 10, f.o.b. Gary 2.50c.
No. 10, del'd Detroit 2.60c.
No. 10, del'd Philadelphia 2.69c.
No. 10, f.o.b. Granite City 2.60c.
No. 10, f.o.b. Birmingham 2.55c.
No. 10, f.o.b. cars dock Pacific ports 2.95c.
No. 10 wrought iron, Pgh. 4.25c.

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh 3.15c.
No. 24, f.o.b. Gary 3.25c.
No. 24, del'd Detroit 3.35c.
No. 24, del'd Philadelphia 3.44c.
No. 24, f.o.b. Granite City 3.35c.
No. 24, f.o.b. Birmingham 3.30c.
No. 24, f.o.b. cars dock Pacific ports 3.80c.
No. 24, wrought iron, Pittsburgh 5.15c.

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh 3.10c.
No. 10 gage, f.o.b. Gary 3.20c.
No. 10 gage, f.o.b. Detroit 3.30c.
No. 10 gage, del'd Philadelphia 3.39c.
No. 10, f.o.b. Granite City 3.30c.
No. 10 gage, f.o.b. Birmingham 3.25c.
No. 10 gage, f.o.b. cars dock Pacific ports 3.70c.

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh 3.55c.
No. 20 gage, f.o.b. Gary 3.65c.
No. 20 gage, del'd Detroit 3.75c.
No. 20 gage, del'd Philadelphia 3.84c.
No. 20, f.o.b. Granite City 3.75c.
No. 20 gage, f.o.b. Birmingham 3.70c.
No. 20 gage, f.o.b. cars, dock, Pacific ports 4.10c.

Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh 3.80c.
No. 24, f.o.b. Gary 3.90c.
No. 24, del'd Philadelphia 4.09c.
No. 24, f.o.b. Granite City 4.00c.

No. 24, f.o.b. Birmingham 3.95c.
No. 24, f.o.b. cars, dock, Pacific ports 4.40c.
No. 24, wrought iron, Pittsburgh 6.10c.

Electrical Sheets

(F.o.b. Pittsburgh)

Base per Lb.

Field grade 3.35c.
Armature 3.70c.
Electrical 4.20c.
Special Motor 5.10c.
Special Dynamo 5.80c.
Transformer 6.30c.
Transformer Special 7.30c.
Transformer Extra Special 7.80c.

Base gage changed from 28 to 34 gage. Gage extras are the same as those applying on hot-rolled, annealed sheets with few exceptions.
Silicon Strip in coils—Sheet price plus silicon sheet extra width extras plus 25c. per 100 lb. for coils.

Long Ternes

No. 24, unassorted 8-lb. coating f.o.b. Pittsburgh 4.10c.
F.o.b. Gary 4.20c.
F.o.b. cars, dock, Pacific ports 4.80c.

Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh 3.50c.
No. 20, f.o.b. Gary 3.60c.
No. 20, f.o.b. Granite City 3.70c.
No. 20, f.o.b. cars dock Pacific ports 4.10c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh, per lb. 3.30c.
No. 28, Gary 3.40c.
No. 28, f.o.b. Granite City 3.50c.
No. 28, cars dock Pacific ports, boxed 4.175c.

Tin Plate

Base per Box

Standard cokes, f.o.b. Pittsburgh district mill \$5.35
Standard cokes, f.o.b. Gary 5.45
Standard coke, f.o.b. Granite City 5.55

Above quotations practically the equivalent of previous quotations owing to new method of quoting, effective Jan. 1, 1937.

Special Coated Manufacturing Ternes

Base per Box

F.o.b. Pittsburgh \$4.65
F.o.b. Gary 4.75
F.o.b. Granite City 4.85

* Customary 1% per cent discount in effect through 1936 discontinued as of Jan. 1, 1937.

Roofing Ternes Plate

(F.o.b. Pittsburgh)

(Per Package, 112 sheets, 20 x 28 in.)
8-lb. coating I.C. \$12.00
15-lb. coating I.C. 14.00
20-lb. coating I.C. 15.00
25-lb. coating I.C. 16.00
30-lb. coating I.C. 17.25
40-lb. coating I.C. 19.50

Hot-Rolled Hoops, Bands, Strip and Flats under 1/4 in.

Base per Lb.

All widths up to 24 in., Pittsburgh 2.40c.
All widths up to 24 in., Chicago 2.50c.
All widths up to 24 in., del'd Detroit 2.60c.
All widths up to 24 in., Granite City 2.60c.
All widths up to 24 in., Birmingham 2.55c.
Cooperage stock, Pittsburgh 2.50c.
Cooperage stock, Chicago 2.60c.

Cold-Rolled Strip*

Base per Lb.

F.o.b. Pittsburgh 3.20c.
F.o.b. Cleveland 3.20c.
Del'd Chicago 3.48c.
F.o.b. Worcester 3.40c.

* Carbon 0.25 and less.

Cold Rolled Spring Steel

Pittsburgh

and

Cleveland Worcester

Carbon	0.25-0.50%	3.20c.	3.40c.
Carbon	.51-.75	4.45c.	4.65c.
Carbon	.76-1.00	6.30c.	6.50c.
Carbon	Over 1.00	8.50c.	8.70c.

Fender Stock

No. 14, Pittsburgh or Cleveland 3.45c.
No. 20, Pittsburgh or Cleveland 3.85c.

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland)
To Manufacturing Trade

	Per Lb.
Bright wire	3.90c.
Galvanized wire	2.95c.
Spring wire	3.50c.

Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.

	Base per Keg
Standard wire nails	\$2.75
Smooth coated nails	\$2.75
Cut nails, carloads	\$5.60

	Base per 100 Lb.
Annealed fence wire	\$3.20
Galvanized fence wire	3.60
Polished staples	3.45
Galvanized staples	3.70
Barbed wire, galvanized	3.40
Twisted barbed wire	3.40
Woven wire fence, base column	74
Single loop bale ties, base col.	63

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., mill prices are \$2 a ton over Pittsburgh, except for woven wire fence, which is \$3 over Pittsburgh and Birmingham mill prices are \$5 a ton over Pittsburgh.

On wire nails, barbed wire and staples, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh.

On nails, staples and barbed wire, prices of \$8 a ton over Pittsburgh are also quoted at Beaumont and Orange, Tex.

STEEL AND WROUGHT IRON PIPE AND TUBING

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills
F.o.b. Pittsburgh only on wrought iron pipe.

Steel	Butt Weld	Wrought Iron
In. Black Galv.	In. Black Galv.	In. Black Galv.
1/2	1/2	1/2
3/4	3/4	3/4
1	1	1
1 1/2	1 1/2	1 1/2
2	2	2
2 1/2	2 1/2	2 1/2
3	3	3
3 1/2	3 1/2	3 1/2
4	4	4
4 1/2	4 1/2	4 1/2
5	5	5
5 1/2	5 1/2	5 1/2
6	6	6
6 1/2	6 1/2	6 1/2
7	7	7
7 1/2	7 1/2	7 1/2
8	8	8
8 1/2	8 1/2	8 1/2
9	9	9
9 1/2	9 1/2	9 1/2
10	10	10
10 1/2	10 1/2	10 1/2
11	11	11
11 1/2	11 1/2	11 1/2
12	12	12
12 1/2	12 1/2	12 1/2

Butt Weld, extra strong, plain ends	Lap Weld, extra strong, plain ends
1/2	1/2
3/4	3/4
1	1
1 1/2	1 1/2
2	2
2 1/2	2 1/2
3	3
3 1/2	3 1/2
4	4
4 1/2	4 1/2
5	5
5 1/2	5 1/2
6	6
6 1/2	6 1/2
7	7
7 1/2	7 1/2
8	8
8 1/2	8 1/2
9	9
9 1/2	9 1/2
10	10
10 1/2	10 1/2
11	11
11 1/2	11 1/2
12	12
12 1/2	12 1/2

On butt-weld and lap-weld steel pipe fobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes

(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Cold Drawn	Hot Rolled
1 in. o.d.	13 B.W.G. \$ 9.46	\$ 8.41
1 1/4 in. o.d.	13 B.W.G. 11.21	9.96
1 1/2 in. o.d.	13 B.W.G. 12.38	11.00
1 3/4 in. o.d.	13 B.W.G. 14.09	12.51
2 in. o.d.	13 B.W.G. 15.78	14.02
2 1/4 in. o.d.	13 B.W.G. 17.69	15.63
2 1/2 in. o.d.	13 B.W.G. 19.87	17.21
2 3/4 in. o.d.	13 B.W.G. 21.22	18.85
3 in. o.d.	13 B.W.G. 22.49	19.98
3 1/4 in. o.d.	13 B.W.G. 23.69	20.97
3 1/2 in. o.d.	13 B.W.G. 25.19	22.47
3 3/4 in. o.d.	13 B.W.G. 26.96	23.83
4 in. o.d.	13 B.W.G. 28.71	25.38
4 1/4 in. o.d.	13 B.W.G. 30.77	27.35

Extra for less-carload quantities:
25,000 lb. or ft. to 29,999 lb. or ft. 5 %
12,000 lb. or ft. to 24,999 lb. or ft. 12 1/2 %
6,000 lb. or ft. to 11,999 lb. or ft. 25 %
2,000 lb. or ft. to 5,999 lb. or ft. 35 %
Under 2,000 lb. or ft. 50 %

CAST IRON WATER PIPE

	Per Net Ton
*6-in. and larger, del'd Chicago	\$55.00
6-in. and larger, del'd New York	53.00
*6-in. and larger, Birmingham	47.00
6-in. and larger, f.o.b. dock, San Francisco or Los Angeles	56.00
F.o.b. dock, Seattle	56.00
4-in. f.o.b. dock, San Francisco or Los Angeles	59.00
F.o.b. dock, Seattle	59.00

Class "A" and gas pipe, \$3 extra.
4-in. pipe is \$3 a ton above 6-in.

Prices for lots of less than 200 tons. For 200 tons and over, 6-in. and larger is \$46, Birmingham, and \$54 delivered Chicago; and 4-in. pipe, \$49, Birmingham, and \$58 delivered Chicago.

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
Machine and carriage bolts:	
1/2 in. x 6 in. and smaller	65 and 5*
Larger and longer up to	
1 in.	60 and 10*
1 1/4 in. and larger	60 and 5*
Lag bolts	60 and 10*
Plow bolts, Nos. 1, 2, 3	
and 7	65 and 5
Hot pressed nuts, and c.p.c.	
and t nuts, square or hex.	
blank or tapped:	
1/2 in. and smaller	65
9/16 in. to 1 in. inclusive	60 and 5
1 1/4 in. and larger	60

* Less carload lots and less than full container quantity. Less carload lots in full container quantity, an additional 10 per cent discount; carload lots and full container quantity, still another 5 per cent discount.

Semi-finished hexagon nuts, U.S.S. and S.A.E.:

1/2 in. and smaller	60 and 10
9/16 in. to 1 in. inclusive	60 and 5
1 1/4 in. and larger	60
Stove bolts in packages, nuts attached	72 1/2
Stove bolts in packages, with nuts separate	72 1/2 and 5
Stove bolts in bulk	80

On stove bolts freight is allowed to destination on 200 lb. and over.

Large Rivets
(1/2-in. and larger)

	Base per 100 Lb.
F.o.b. Pittsburgh or Cleveland	\$3.60
F.o.b. Chicago or Birmingham	3.70

Small Rivets
(7/16-in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh	65 and 5
F.o.b. Cleveland	65 and 5
F.o.b. Chicago and Birmingham	65 and 5

Cap and Set Screws
(Freight allowed up to but not exceeding 65c. per 100 lb. on lots of 200 lb. or more.)

	Per Cent Off List
Milled cap screws, 1 in. dia. and smaller	50 and 10
Milled standard set screws, case hardened, 1 in. dia. and smaller	75
Milled headless set screws, cut thread 1/2 in. and smaller	75
Upset hex. head cap screws U.S.S. or S.A.E. thread 1 in. and smaller	60
Upset set screws, cup and oval points	75
Milled studs	65

Alloy and Stainless Steel

Alloy Steel Blooms, Billets and Slabs
F.o.b. Pittsburgh, Chicago, Canton, Massillon, Buffalo, Bethlehem.
Base price, \$60 a gross ton.

	Alloy Steel Bars
F.o.b. Pittsburgh, Chicago, Buffalo, Bethlehem, Massillon or Canton.	
Open-hearth grade, base	3.00c.
Delivered, Detroit	3.15c.
S.A.E.	
Series	Alloy
Numbers	Differential
200 (1/4% Nickel)	\$0.35
2100 (1 1/4% Nickel)	0.75
2300 (3 1/4% Nickel)	1.55

2500 (5% nickel)	\$2.25
3100 Nickel-chromium	0.70
3200 Nickel-chromium	1.35
3300 Nickel-chromium	3.80
3400 Nickel-chromium	3.20
4100 Chromium-molybdenum (0.15 to 0.25 Molybdenum)	0.55
4100 Chromium-molybdenum (0.25 to 0.40 Molybdenum)	0.75
4600 Nickel-molybdenum (0.30 to 0.30 Mo, 1.50 to 2.00 Ni)	1.10
5100 Chrome steel (0.60-0.90 Cr.)	0.35
5100 Chrome steel (0.80-1.10 Cr.)	0.45
5100 Chromium spring steel	0.15
6100 Chromium-vanadium bar	1.20
6100 Chromium-vanadium spring steel	0.85
Chromium-nickel-vanadium	1.50
Carbon-vanadium	0.85

These prices are for hot-rolled steel bars. The differential for most grades in electric furnace steel is 50c. higher. Slabs with a section area of 16 in. and 2 1/2 in. thick or over take the billet base.

Alloy Cold-Finished Bars
F.o.b. Pittsburgh, Chicago, Gary, Cleveland or Buffalo, 3.60c. base per lb. Delivered Detroit, 3.75c., carlots.

CORROSION & HEAT RESISTANT ALLOYS

	(Base prices, cents per lb., f.o.b. Pittsburgh)
Chrome-Nickel	
No. 304	No. 302
Forging billets	20.40c.
Bars	24c.
Plates	27c.
Structural shapes	24c.
Sheets	34c.
Hot-rolled strip	21.50c.
Cold-rolled strip	29c.
Drawn wire	24c.

	Straight Chrome
No. 410	No. 430
Bars	27.50c.
Plates	25.50c.
Sheets	32.50c.
Hot strip	23c.
Cold stp.	22.50c.

TOOL STEEL

High speed	67c.
High-carbon-chrome	43c.
Oil-hardening	24c.
Special	22c.
Extra	18c.
Regular	14c.

Prices for warehouse distribution to all points on or East of Mississippi River are 2c. a lb. higher. West of Mississippi quotations are 2c. a lb. higher.

British and Continental

BRITISH

	Per Gross Ton f.o.b. United Kingdom Ports
Ferromanganese, export	£20 Nominal
Tin plate, per base box 25s. to 25s. 6d.	
Steel bars, open-hearth	£11 2s. 6d.
Beams, open-hearth	£11 7s. 6d.
Channels, open-hearth	£11 2s. 6d.
Angles, open-hearth	£11 2s. 6d.
Black sheets, No. 24 gage	£15
Galvanized sheets, No. 24 gage	£18 15s.

CONTINENTAL

	Per Gross Ton, Gold £, f.o.b. Continental Ports
Billets, Thomas	£4 7s. 6d.
Wire rods, No. 5 B.W.G.	£8 15s.
Steel bars, merchant	£8 to £8 5s.
Sheet bars	£4 8s. 6d.
Plate 1/2 in. and up	£6 17s. 6d. to £7
Plate 3/16 in. and 5 mm.	£7 2s. 6d.
Sheet, 1/2 in.	£3 9s. 6d.
Beams, Thomas	£5 2s. 6d.
Angles (Basic)	£6 2s. 6d.
Hoops and strip, base	£7 to £7 5s.

IRON AND STEEL WAREHOUSE PRICES

PITTSBURGH*

	Per Net Ton
Plates	3.70c.
Structural shapes	3.70c.
Soft-steel bars and small shapes	3.80c.
Reinforcing steel bars	3.80c.
Cold-finished and screw stock:	
Rounds and hexagons	4.15c.
Squares and flats	4.15c.
Hot rolled strip incl. 3/16 in. thick, under 24 in. wide	4.00c.
Hoops	4.50c.
Hot-rolled annealed sheets (No. 24), 10 or more bundles	4.50c.
Galv. sheets (No. 24), 10 or more bundles	5.15c.
Hot-rolled sheets (No. 10)	3.75c.
Galv. corrug. sheets (No. 28), per square (more than 3750 lb.)	\$4.48
Spikes, large	1 to 24 kegs 3.90c.
Per Cent Off List	
Track bolts, all sizes per 100 count	55
Machine bolts, 100 count	**
Carriage bolts, 100 count	**
Nuts, all styles, 100 count	**
Large rivets, base per 100 lb.	\$4.35
Wire, black, soft ann'l'd, base per 100 lb.	3.45c.
Wire, galv. soft, base per 100 lb.	3.85c.
Common wire nails, per keg	3.00c.
Cement coated nails, per keg	3.00c.

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lb.

* Delivered in Pittsburgh switching district.

** Prices on application.

CHICAGO Base per Lb.

Plates and structural shapes	3.75c.
Soft steel bars, rounds	3.85c.
Soft steel bars, squares and hexagons	4.00c.
Cold-fin. steel bars:	
Rounds and hexagons	4.30c.
Flats and squares	4.30c.
Hot-rolled strip	4.10c.
Hot-rolled annealed sheets (No. 24)	4.60c.
Galv. sheets (No. 24)	5.25c.
Spikes (keg lots)	4.40c.
Track bolts (keg lots)	5.60c.
Rivets, structural (keg lots)	4.60c.
Rivets, boiler (keg lots)	4.70c.
Per Cent Off List	
Machine bolts	*60
Carriage bolts	*60
Lag screws	*55 and 5
Hot-pressed nuts, sq. tap or blank	*60
Hot-pressed nuts, hex. tap or blank	*60
Hex. head cap screws	60
Cut point set screws	75
Flat head bright wood screws	62 and 20
Spring cotters	45
Stove bolts in full packages	72½
Rd. hd. tank rivets, 7/16 in. and smaller	55
Wrought washers	\$4.00 off list
Black ann'l'd wire per 100 lb. to mfg. trade (No. 14 and heavier)	\$4.55
Com. wire nails, 15 kegs or more, per keg	\$3.20
Cement c'd nails, 15 kegs or more, per keg	\$3.20

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 3999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

* These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 60 per cent off. Discounts applying to country trade are 70 per cent off, f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.

NEW YORK

	Base per Lb.
Plates, ¼ in. and heavier	4.00c.
Structural shapes	3.97c.
Soft steel bars, round	4.12c.
Iron bars, Swed. charcoal	7.00 to 7.25c.
Cold-fin. shafting and screw stock:	
Rounds and hexagons	4.57c.
Flats and squares	4.57c.
Cold-rolled; strip, soft and quarter hard	3.92c.
Hoops	4.32c.

Bands	4.32c.
Hot-rolled sheets (No. 10)	4.00 to 4.07c.
Hot-rolled ann'l'd sheets (No. 24*)	4.50 to 4.32c.
Galvanized sheets (No. 24*)	4.50 to 5.47c.
Long term sheets (No. 24)	5.50 to 6.20c.
Armco iron, galv. (No. 24†)	6.25c.
Toncan iron, galv. (No. 24†)	6.25c.
Galvanneal (No. 24†)	6.60c.
Armco iron, hot-rolled annealed (No. 24†)	5.65c.
Toncan iron, hot-rolled annealed (No. 24†)	5.65c.
Armco iron hot-rolled (No. 10†)	4.60c.
Toncan iron, hot-rolled (No. 10†)	4.60c.
Cold-rolled sheets (No. 20) for quantities 400 to 1499 lb.	
Standard quality	5.40c.
Deep drawing	6.05c.
Stretcher leveled	6.05c.
SAE, 2300, hot-rolled	7.82c.
SAE, 3100, hot-rolled	6.37c.
SAE, 6100, hot-rolled, annealed	10.52c.
SAE, 2300, cold-rolled	9.00c.
SAE, 3100, cold-rolled, annealed	8.35c.
Floor plate, ¼ in. and heavier	5.60c.
Standard tool steel	12.50c.
Wire, black, annealed (No. 9)	4.25c.
Wire, galv. (No. 9)	4.60c.
Tire steel, 1 x ½ in. and larger	4.61c.
Open-hearth spring steel	4.75c. to 10.25c.
Common wire nails, base per keg	3.25c.

Per Cent Off List

Machine bolts, square head and nut: All diameters. Prices on application
Carriage bolts, cut thread: All diameters. Prices on application

* No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.
† 125 lb. and more.

ST. LOUIS

Base per Lb.

Plates and struc. shapes	3.99c.
Bars, soft steel (rounds and flats)	4.09c.
Bars, soft steel (squares, hexagons, ovals, half ovals and half rounds)	4.24c.
Cold-fin. rounds, shafting, screw stock	4.54c.
Hot-rolled annealed sheets (No. 24)	4.84c.
Galv. sheets (No. 24*)	5.49c.
Hot-rolled sheets (No. 10)	4.09c.
Black corrug. sheets (No. 24*)	4.89c.
2 galv. corrug. sheets	5.54c.
Structural rivets	4.94c.
Boiler rivets	5.04c.
Per Cent Off List	
Tank rivets, 7/16 in. and smaller 55	
Machine and carriage bolts, lag screws, fitting up bolts, bolt ends, plow bolts, hot-pressed nuts, square and hexagon, tapped or blank, semi-finished nuts; all quantities	65

* No. 26 and lighter take special prices.

PHILADELPHIA

Base per Lb.

*Plates, ¼-in. and heavier	3.80c.
*Structural shapes	3.80c.
*Soft steel bars, small shapes, iron bars (except bands)	3.90c.
†Reinforc. steel bars, sq. twisted and deformed	3.43c.
Cold-finished steel bars	4.53c.
*Steel hoops	4.25c.
*Steel bands, No. 12 and 3/16 in. incl.	4.00c.
Spring steel	5.40c.
†Hot-rolled anneal. sheets (No. 24)	4.65c.
†Galvanized sheets (No. 24)	5.30c.
*Hot-rolled annealed sheets (No. 10)	3.90c.
Diam. pat. floor plates, ¼ in.	5.45c.

These prices are subject to quantity differential except on reinforcing and Swedish iron bars.

* Base prices subject to deduction on orders aggregating 4000 lb. or over.
† For 25 bundles or over.
‡ For less than 2000 lb.

CLEVELAND

Base per Lb.

Plates and struc. shapes	3.86c.
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Soft steel bars	3.75c.
†Reinforc. steel bars	2.60c.
‡Cold-finished steel bars	4.30c.
Hot-rolled strip, 6 in. wide and under	4.16c.
Cold-finished strip	3.60c.
Hot-rolled annealed sheets (No. 24)	4.66c.
Galvanized sheets (No. 24)	5.31c.
Hot-rolled sheets (No. 10)	3.91c.
Hot-rolled 3/16 in. 24 to 48 in. wide sheets	3.91c.
Floor plates, 3/16 in. and heavier	5.76c.
*Black ann'l'd wire, per 100 lb.	\$3.40
*No. 9 galv. wire, per 100 lb.	3.80
*Com. wire nails, base per keg	2.95

Per Cent Off List

Machine and carriage bolts, small	65 and 5
Large	60 and 10
Nuts, 100 count	
½ in. and smaller	65 and 5
9/16 in. to 1 in.	60 and 10

† Outside delivery 10c. less.

* For 5000 lb. or less.

‡ Plus switching and cartage charges and quantity differentials up to 50c.

CINCINNATI

Base per Lb.

Plates and struc. shapes	3.95c.
Floor plates	5.55c.
Bars, rounds, flats and angles	4.05c.
Other shapes	4.20c.
Rail steel reforc. bars	3.75c.
Hoops and bands, 3/16 in. and lighter	4.25c.
Cold-finished bars	4.60c.
Hot-rolled annealed sheets (No. 24) 3500 lb. or more	4.60c.
Galv. sheets (No. 24) 3500 lb. or more	\$5.25
Hot-rolled sheets (No. 10)	4.00c.
Small rivets	.55 per cent off list
No. 9 ann'l'd wire, per 100 lb. (1000 lb. or over)	\$3.48
Com. wire nails, base per keg: Any quantity less than carload	3.20
Cement c'd nails, base 100-lb. keg	3.50
Chain, lin. per 100 lb.	8.35

Net per 100 Ft.

Seamless steel boiler tubes, 2-in.	\$21.80
4-in.	52.45
Lap-welded steel boiler tubes, 2-in.	20.73
4-in.	48.41

BUFFALO Base per Lb.

Plates	3.92c.
Struc. shapes	3.80c.
Soft steel bars	3.90c.
Reinforcing bars	3.10c.
Cold-fin. flats and sq.	4.35c.
Rounds and hex.	4.35c.
Cold-rolled strip steel	3.79c.
Hot-rolled annealed sheets (No. 24)	4.80c.
Heavy hot-rolled sheets (3/16 in., 24 to 48 in. wide)	3.97c.
Galv. sheet (No. 24)	5.45c.
Bands	4.22c.
Hoops	4.22c.
Heavy hot-rolled sheets	3.97c.
Com. wire nails, base per keg 32.26	
Black wire, base per 100 lb. (2500-lb. lots or under)	4.55c.
(Over 2500 lb.)	4.45c.

BOSTON

Base per Lb.

Channels, angles	4.20c.
Tees and zeos, under 3"	4.45c.
H beams and shapes	4.07c.
Plates—Sheared, tank and univ. mill, ¼ thick and heavier	4.08c.
Floor plates, diamond pattern	5.13c.
Bar and bar shapes (mild steel)	4.20c.
Bands 3/16 in. thick and No. 12 ga. incl.	4.40 to 5.40
Half rounds, half ovals, ovals and bevels	5.45c.
Tire steel	5.45c.
Cold-rolled strip steel	3.845c.
Cold-finished rounds, squares and hexagons	4.65c.
Cold-finished flats	4.65c.
Blue annealed sheets, No. 10 ga.	3.90c.
One pass cold-rolled sheets No. 24 ga.	4.50c.
Galvanized steel sheets, No. 24 ga.	5.05c.
Lead coated sheets, No. 24 ga.	6.15c.

Price delivered by truck in metropolitan Boston, subject to quantity differentials.

DETROIT

Base per Lb.

Soft steel bars	3.94c.
Structural shapes	3.95c.
Plates	3.95c.
Floor plates	5.85c.
Hot-rolled annealed sheets	
(No. 24)*	4.69c.
Hot-rolled sheets (No. 10)	3.94c.
Galvanized sheets (No. 24)*	5.40c.
Bands and hoops	4.13c.
Cold-finished bars	4.30c.
Cold-rolled strip	3.78c.
Hot-rolled alloy steel (S.A.E. 3100 Series)	6.44c.
Quantity differential on bars, plates, structural shapes, bands, hoops, floor plates and heavy hot-rolled: Under 100 lb., 1.50c. over base; 100 to 399 lb., base plus .50c.; 400 to 3999 lb. base; 4000 to 9999 lb., base less .10c.; 10,000 lb. and over, less .15c.	

* Under 400 lb., .50c. over base; 400 to 1499 lb., base; 1500 to 3499 lb., base less .10c.; 3500 lb. and over, base less .15c.

Prices delivered by truck in metropolitan Detroit, subject to quantity differentials covering shipment at one time.

Galvanized and hot-rolled annealed may not be combined to obtain quantity deductions.

MILWAUKEE

Base per Lb.

Plates and structural shapes	3.86c.
Soft steel bars, rounds up to 8 in., flats and fillet angles	3.96c.
Soft steel bars, squares and hexagons	4.11c.
Hot-rolled strip	4.21c.
Hot-rolled annealed sheets (No. 24)	4.71c.
Galvanized sheets (No. 24)	5.36c.
Cold-finished steel bars	4.41c.
Structural rivets (keg lots)	5.16c.
Boiler rivets, cone head (keg lots)	5.26c.
Track spikes (keg lots)	4.61c.
Track bolts (keg lots)	5.81c.
Black annealed wire (No. 6 to No. 9 incl.)	4.06c.
Com. wire nails and cement coated nails	
1 to 14 kegs	3.25c.

Per Cent Off List

Machine bolts and carriage bolts, 1/2x6 and smaller or shorter	65
Larger and longer up to 1 in. diam.	60-5
1 1/2 in. and larger	60
Coach and lag screws	60-5
Hot-pressed nuts, sq. and hex. tapped or blank, 1-199 lb.	50
200 lb. and over:	
1/2 in. and smaller	65
9/16 to 1 in.	60-5
1 1/2 in. and over	50-10-5

Prices given above are delivered Milwaukee.

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 3999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 1500 lb. On cold-finished bars the prices are for orders of 1000 lb. or more of a size.

ST. PAUL

Base per Lb.

Mild steel bars, rounds	4.10c.
Structural shapes	4.00c.
Plates	4.00c.
Cold-finished bars	4.55c.
Hot-rolled annealed sheets, No. 24	4.25c.
Galvanized sheets, No. 24	5.50c.

On mild steel bars, shapes and plates the base applies on 400 to 14,999 lb. On hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over. Base on cold-finished bars is 1400 lb. and over of a size.

BALTIMORE

Base per Lb.

Mild steel bars and small shapes	4.00c.
Structural shapes	3.90c.
Reinforcing bars, 5 to 15 tons	3.16c.
Plates	3.90c.
Hot-rolled sheets, No. 10	3.95c.
Bands	4.20c.
Hoops	4.45c.
Special threading steel	4.15c.
Checkered floor plates 1/4 in. and heavier	5.80c.
Galvanized sheets, No. 24, 100 bds. or more	\$4.70
Cold-rolled rounds, hexagons, squares and flats, 1000 lb. and more	\$4.50

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets the base applies on orders 400 to 3999 lb.

All prices are f.o.b. consumers' plants.

For second zone add 10c. per 100 lb. for trucking.

CHATTANOOGA

Base per Lb.

Mild steel bars	4.21c.
Iron bars	4.21c.
Reinforcing bars	4.21c.
Structural shapes	4.11c.
Plates	4.11c.
Hot-rolled sheets No. 10	4.16c.
Hot-rolled annealed sheets, No. 24*	4.06c.
Galvanized sheets No. 24*	4.76c.
Steel bands	4.41c.
Cold-finished bars	4.86c.

* Plus mill item extra.

MEMPHIS

Base per Lb.

Mild steel bars	4.31c.
Shapes, bar size	4.31c.
Iron bars	4.31c.
Structural shapes	4.21c.
Plates	4.21c.
Hot-rolled sheets, No. 10	4.26c.
Hot-rolled annealed sheets, No. 24	4.31c.
Galvanized sheets, No. 24	5.66c.
Steel bands	4.56c.
Cold-drawn rounds	4.80c.
Cold-drawn flats, squares, hexagons	6.80c.
Structural rivets	5.15c.
Bolts and nuts, per cent off list	55
Small rivets, per cent off list	55

NEW ORLEANS

Base per Lb.

Mild steel bars	4.20c.
Reinforcing bars	3.24c.
Structural shapes	4.10c.
Plates	4.10c.
Hot-rolled sheets, No. 10	4.35c.
Steel bands	4.75c.
Cold-finished steel bars	5.10c.
Structural rivets	4.85c.
Boiler rivets	4.85c.
Common wire nails, base per keg	\$3.30
Bolts and nuts, per cent off list	60

PACIFIC COAST

Base per Lb.

	San Francisco	Los Angeles	Seattle
Plates, tank and U. M.	4.05c.	4.30c.	4.25c.
Shapes, standard	4.05c.	4.30c.	4.25c.
Soft steel bars	4.20c.	4.30c.	4.45c.
Reinforcing bars, f.o.b. cars dock Pacific ports	2.975c.	2.975c.	3.625c.
Hot-rolled annealed sheets (No. 24)	5.15c.	5.05c.	5.35c.
Hot-rolled sheets (No. 10)	4.30c.	4.50c.	4.50c.
Galv. sheets (No. 24 and lighter)	5.35c.	5.55c.	5.90c.
Galv. sheets (No. 22 and heavier)	6.10c.	5.70c.	5.90c.
Cold-finished steel			
Rounds	6.30c.	6.35c.	7.10c.
Squares and hexagons	8.05c.	8.10c.	7.10c.
Flats	3.55c.	3.60c.	3.10c.
Common wire nails—base per keg less carload	\$3.65	\$3.60	\$3.70

All items subject to differentials for quantity.

REFRACTORIES PRICES

Fire Clay Brick

Per 1000 f.o.b. Works

First quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	\$54.00
First quality, New Jersey	56.00
Select, Ohio	49.00
Second quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	49.00
Second quality, New Jersey	51.00
No. 1, Ohio	46.00
Ground fire clay, per ton	3.00
5 per cent trade discount on fire clay brick, except for New Jersey, quoted at net price.	

Silica Brick

Per 1000 f.o.b. Works

Pennsylvania	\$54.00
Chicago District	63.00
Birmingham	54.00
Silica cement per net ton (Eastern)	9.50
5 per cent trade discount on silica brick.	

Chrome Brick

Per Net Ton

Standard f.o.b. Baltimore, Plymouth Meeting and Chester	\$49.00
Chemically bonded f.o.b. Baltimore, Plymouth Meeting and Chester, Pa.	49.00

Magnesite Brick

Per Net Ton

Standard f.o.b. Baltimore and Chester, Pa.	\$69.00
Chemically bonded, f.o.b. Baltimore	59.00

Grain Magnesite

Per Net Ton

Imported, f.o.b. Baltimore and Chester, Pa. (in sacks)	\$45.00
Domestic, f.o.b. Baltimore and Chester, in sacks	43.00
Domestic, f.o.b. Chewelah, Wash.	25.00

PIG IRON

No. 2 Foundry

F.o.b. Everett, Mass.	\$25.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa., and Sparrows Point, Md.	25.00
Delivered Brooklyn	27.27
Delivered Newark or Jersey City	26.39
Delivered Philadelphia	25.76
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Buffalo, Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	24.00
F.o.b. Jackson, Ohio	25.75
Delivered Cincinnati	24.07
F.o.b. Duluth	24.50
F.o.b. Provo, Utah	22.00
Delivered San Francisco, Los Angeles or Seattle	\$26.50
F.o.b. Birmingham*	20.38

* Delivered prices on southern iron for shipment to northern points are 50c. a ton below delivered prices from nearest northern basing point on iron with phosphorus content of 70 and over.

Malleable

Base prices on malleable iron are 50c. a ton above No. 2 foundry quotations at Everett, Eastern Pennsylvania furnaces, Erie and Buffalo. Elsewhere they are the same.

Basic

F.o.b. Everett, Mass.	\$25.75
F.o.b. Bethlehem, Birdsboro, Swedeland and Steelton, Pa., and Sparrows Point, Md.	24.50
F.o.b. Buffalo	23.00
F.o.b. Neville Island, Sharpsville and Erie, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago and Granite City, Ill.	23.50
Delivered Cincinnati	24.51
Delivered Canton, Ohio	24.76
Delivered Mansfield, Ohio	25.26
F.o.b. Jackson, Ohio	25.50
F.o.b. Birmingham	19.00

Bessemer

F.o.b. Everett, Mass.	\$26.75
F.o.b. Bethlehem, Birdsboro and Swedeland, Pa.	26.00
Delivered Boston Switching District	26.50
Delivered Newark or Jersey City	27.39
Delivered Philadelphia	26.76
F.o.b. Buffalo and Erie, Pa., and Duluth	25.00
F.o.b. Neville Island and Sharpsville, Pa.; Youngstown, Cleveland, Toledo and Hamilton, Ohio; Detroit; Chicago	24.50
F.o.b. Birmingham	25.00
Delivered Cincinnati	25.51
Delivered Canton, Ohio	25.76
Delivered Mansfield, Ohio	26.26

Low Phosphorus

Basing points: Birdsboro, Pa., Steelton, Pa., and Standish, N. Y.	\$28.50
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Gray Forge

Valley or Pittsburgh furnace	\$23.50
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Charcoal

Lake Superior furnace	\$27.00
Delivered Chicago	30.04

Canadian Pig Iron

Per Gross Ton

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75	\$26.50
No. 2 fdy., sil. 1.75 to 2.25	25.50
Malleable	26.00
Basic	25.50
Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75	\$27.50
No. 2 fdy., sil. 1.75 to 2.25	27.00
Malleable	27.50
Basic	27.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans.	
Domestic, 80% (carload)	\$102.50

RAW MATERIALS PRICES

Spiegeleisen

Per Gross Ton Furnace	
Domestic, 19 to 21%	\$33.00
F.o.b. New Orleans	33.00

Electric Ferro-silicon

Per Gross Ton Delivered	
50% (carloads)	\$69.50
50% (ton lots)	77.00
75% (carloads)	126.00
75% (ton lots)	136.00

Silvery Iron

Per Gross Ton	
F.o.b. Jackson, Ohio, 5.00 to 5.50%	\$27.50

For each additional 0.5% silicon up to 17%, 50c. a ton is added.

The lower all-rail delivered price from Jackson or Buffalo is quoted with freight allowed. Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Manganese, each unit over 2%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Bessemer Ferro-silicon

F.o.b. Jackson, Ohio, Furnace	
Per Gross Ton	
10.00 to 10.50%	\$33.50
10.51 to 11.00%	34.00
11.01 to 11.50%	34.50
11.51 to 12.00%	35.00
12.01 to 12.50%	35.50
12.51 to 13.00%	36.00
13.01 to 13.50%	36.50
13.51 to 14.00%	37.00
14.01 to 14.50%	37.50
14.51 to 15.00%	38.00
15.01 to 15.50%	38.50
15.51 to 16.00%	39.00
16.01 to 16.50%	39.50
16.51 to 17.00%	40.00

Manganese 2 to 3%, \$1 a ton additional. For each unit of manganese over 3%, \$1 a ton additional. Phosphorus 0.75% or over, \$1 a ton additional.

Base prices at Buffalo are \$1.25 a ton higher than at Jackson.

Other Ferroalloys

Ferrotungsten, per lb. contained W del. carloads	\$1.80
Ferrotungsten, lots of 5000 lbs.	1.85
Ferrotungsten, smaller lots	1.90
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr per lb. contained Cr delivered, in carloads, and contract	10.50c.*
Ferrochromium, 2% carbon	16.50c. to 17.00c.*
Ferrochromium, 1% carbon	17.50c. to 18.00c.*
Ferrochromium, 0.10% carbon	19.50c. to 20.00c.*
Ferrochromium, 0.06% carbon	20.00c. to 20.50c.*
Ferrovanadium, del. per lb. contained V.	\$2.70 to \$2.90
Ferrocolumbium, per lb. contained columbium, f.o.b. Niagara Falls, N. Y.	\$2.50*
Ferrocobalt, 15 to 18% Ti, 7 to 8% C, f.o.b. furnace carload and contract per net ton	\$142.50
Ferrocobalt, 17 to 20% Ti, 3 to 5% C, f.o.b. furnace, carload and contract, per net ton	\$157.50
Ferrophosphorus, electric, or blast furnace material, in carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage, freight equalized with Rockdale, Tenn., per gross ton	63.50
Ferrophosphorus, electric, 24%, in carlots, f.o.b. Anniston, Ala., per gross ton with \$3 unitage, freight equalized with Nashville, Tenn.	80.00
Ferromolybdenum, per lb. Mo del.	95c.
Calcium molybdate, per lb. Mo del.	80c.
Silico spiegel, per ton, f.o.b. furnace, carloads	\$45.00
Ton lots or less, per ton	50.00
Silico-manganese, gross ton, delivered.	
3%	101.50
2.50% carbon grade	106.50
2% carbon grade	111.50
1% carbon grade	121.50

* Spot prices are \$5 a ton higher. Spot premium on 75 per cent ferro-silicon is \$10 a ton.

ORES

Lake Superior Ores

Delivered Lower Lake Ports	
Per Gross Ton	
Old range, Bessemer, 51.50%	\$5.25
Old range, non-Bessemer, 51.50%	5.10
Mesabi, Bessemer, 51.50%	5.10

Mesabi, non-Bessemer, 51.50%	\$4.95
High phosphorus, 51.50%	4.85

Foreign Ore

C.A.F. Philadelphia or Baltimore

Per Unit	
Iron, low phos., copper free, 55 to 58% dry, Algeria, nominal	17.00c.
Iron, low phos., Swedish, average, 68% iron	Nominal
Iron, basic or foundry, Swedish, aver. 65% iron	Nominal
Iron, basic or foundry, Russian, aver. 65% iron	Nominal
Man., Caucasian, washed	52c.
Man., African, Indian, 44-48%	Nominal
Man., African, Indian, 49-51%	Nominal
Man., Brazilian, 46 to 48%	Nominal

Per Net Ton Unit

Tungsten, Chinese, wolframite, duty paid, delivered, nominal	\$26.00 to \$28.00
Tungsten, domestic, scheelite delivered	Nominal
Chrome ore (lump) c.i.f. Atlantic Seaboard, per gross ton:	
South African (low grade)	\$16.00
Rhodesian, 45%	23.00
Rhodesian, 48%	26.75
Turkish, 43-49%	25.50 to \$26.50
Turkish, 45-46%	23.50 to 24.00
Turkish, 44%	19.00 to 19.50
Chrome concentrates (Turkish) c.i.f. Atlantic Seaboard, per gross ton:	
50%	\$25.50 to \$26.50
48-49%	24.50 to 25.00

FLUORSPAR

Per Net Ton

Domestic, washed gravel, 85-5, f.o.b. Kentucky and Illinois mines, all rail	\$20.00
Domestic, barge and rail	22.00
No. 2 lump, 85-5, f.o.b. Kentucky and Illinois mines	\$22.00 to 23.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	24.50
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2% silicon, f.o.b. Illinois and Kentucky mines	35.00

FUEL OIL

Per Gal.

F.o.b. Bayonne or Baltimore, No. 3 distillate	5.25c.
F.o.b. Bayonne or Baltimore, No. 4 industrial	5.25c.
Del'd Ch'go, No. 3 industrial	4.15c.
Del'd Ch'go, No. 5 industrial	4.00c.
Del'd Cleve'd, No. 3 distillate	5.75c.
Del'd Cleve'd, No. 4 industrial	5.75c.
Del'd Cleve'd, No. 5 industrial	5.00c.

COKE AND COAL

Coke Per Net Ton

Furnace, f.o.b. Connellsville, Prompt	\$4.35 to \$4.60
Foundry, f.o.b. Connellsville, Prompt	5.00 to 6.25
Foundry, by-product, Chicago ovens	10.25
Foundry, by-product, del'd New England	12.50
Foundry, by-product, del'd Newark or Jersey City	10.85 to 11.30
Foundry, by-product, Philadelphia	10.60
Foundry, by-product, delivered Cleveland	11.00
Foundry, by-product, delivered Cincinnati	10.50
Foundry, Birmingham	7.50
Foundry, by-product, del'd St. Louis industrial district	11.00 to 11.50
Foundry, from Birmingham, f.o.b. cars docks, Pacific ports	14.75

Coal Per Net Ton

Mine run steam coal, f.o.b. W. Pa. mines	\$1.50 to \$1.75
Mine run coking coal, f.o.b. W. Pa.	1.75 to 1.90
Gas coal, 4-in. f.o.b. Pa. mines	2.00 to 2.25
Mine run gas coal, f.o.b. Pa. mines	1.90 to 2.00
Steam slack, f.o.b. W. Pa. mines	1.00 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.20 to 1.45

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THIS WEEK'S MACHINE ...TOOL ACTIVITIES...

... Chrysler still buying tools for new Dodge truck plant.

o o o

... Business generally affected by summer lull.

o o o

... Many quotations still outstanding; action expected after Labor Day.

Detroit

CHRYSLER still is the only bright spot in the machinery market, with orders coming through steadily for the Dodge truck plant and optimism being expressed by David A. Wallace of the Chrysler Division, who said, with regard to the addition of 100,000 sq. ft. of production floor area in the Jefferson plant, "A great percentage of this increased area is allotted to our machining operations. The building extension is to be equipped with the latest type of machinery and will have one of the most modern and efficient lighting systems in industry. It has been necessary to relocate some 3000 of our present machines. This work is being done with no interruptions in our production operations."

New equipment is being added at the Michigan Seamless Tube Co., South Lyon, Mich. A 120-ft. long continuous annealing furnace with controlled atmosphere, propane tanks and a large reservoir for cooling water, are near completion. A 100,000-lb. capacity draw bench with automatic unloader is also being installed. No quantity buying of machinery has been reported in recent weeks except for the Dodge plant, although several General Motors divisions and Chrysler's Windsor plant have just placed orders for large quantities of gages.

Cleveland

MACHINE tool sales and inquiry continue light with local dealers whose orders are limited to single tools. Business with manufacturers is holding to recent volume, and new orders are about equal to shipments, so that there is little improvement in deliveries. The Erie Railroad has pur-

chased two or three machines against its recent list. Some orders for horizontal boring mills are being taken following the 10 per cent advance in July, which brought out considerable business. Delivery promises on these tools range from four to six months.

Forging machinery, which had been rather quiet for some time, shows an improvement, new orders being about evenly divided between the automotive industry and buyers in other fields. Changes in production methods have resulted in some good business from the automotive industry.

Cincinnati

MACHINE tool demand is at a fair level. Drill manufacturers report a slight increase in demand for the second week. The trade anticipates no change in current conditions until after Labor Day. A large number of propositions are still out on quotations, but no move to purchase has been made.

Local plants are maintaining production at about 70 per cent of capacity, while night shifts and overtime work has been reduced. Some plants are replenishing inventories in anticipation of heavy fall demand, but stocks are being kept at conservative levels.

Pittsburgh

If the present volume of inquiries is a criterion of orders to follow, machine tool business will step up somewhat in the near future. From a low point reached a month ago inquiries have improved considerably and involve not only requests for data to take care of new plant developments, but represent a fair amount of replacement business. Orders have taken

a turn for the better in the past week, but the total volume is still not far above recent levels. Most dealers are of the opinion that September business will show an increase from August totals. Meanwhile, deliveries continue unchanged, and backlogs at steel mill equipment manufacturers' plants remain at record levels.

Chicago

FURTHER improvement in business during the past week is reported by machine tool sales offices here. The betterment has been fairly general both as to types of equipment and industries doing the bulk of buying. Farm implement and tractor manufacturers continue to account for a large part of current purchasing. For the most part, the incoming business in the last week, as in the immediately preceding weeks, has been made up of small lots. No lists of outstanding size have been reported.

Works Program Report Issued by Hopkins

THE history of the Federal Government's efforts to aid the "underprivileged of America," starting with the Emergency Relief and Construction Act of 1932, through March, 1936, when a peak of 3,839,000 persons were employed on various relief projects, and up to Feb. 20 of this year when the employment figure stood at 2,884,000 persons, is the subject of a report recently issued by Harry L. Hopkins, administrator of the Works Program.

According to the report, total funds made available for relief work since 1932 amount to \$6,920,914,322 and the average wage paid to workers varies from \$19 for unskilled workers in certain regions to \$94 for professional and technical workers. Statistics based on the payroll of June, 1936, show that the average monthly wage of all workers for that period was \$49.22.

The physical accomplishments of the program are listed in detail in the report and include the construction of 22,765 miles of dirt, clay and gravel roads, 7633 bridges, 1155 sewage treatment plants, 20 airports and 22 power dams.

Blaw-Knox Co. has purchased the assets and business of R. M. Gordon & Co., manufacturers of grease lubricating systems for the steel industry, according to William P. Witherow, president Blaw-Knox Co. The activities of the new division will be expanded into additional fields, and the company will be known as the Gordon Lubricator Division of the Blaw-Knox Co.

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more illustrations, more reference tables, more ways of keeping abreast of what's new and proved. More solutions to your problems.

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read hundreds more will be supplied in the next few days.

FOUNDRY BASIC FACTOR IN QUALITY



CHICAGO, ILL., Aug. 23—"Our foundries are basic factors in creating and maintaining the uniformly high quality of Crane products," said a Crane official here today in a conversation regarding the **IRON AGE** Foundry Number.

"'Poured right is half right,' you might say if you wanted a simple phrase for it," he continued, "especially if you consider that the word 'pouring' includes all of the many tests, inspections and operations that materials and products must undergo before they are released from a Crane foundry for further operations."

"You just cannot make a good product from a bad start is a Crane belief, so whether Crane is dealing with iron, steel, copper, brass or alloys, Crane foundry practice is kept up to the highest standards which we can develop or learn from the experience of others."

"This means that iron and steel men can be sure that every Crane valve and fitting which they install to expedite their processes will give them the last word in dependability, economy and long life. Use your Crane No. 52 Catalog to pick the valves for your needs. Send your order to the nearest Crane branch or distributor. That is the simple way to solve your valve and fitting problems."



PLANT EXPANSION AND EQUIPMENT BUYING

◀ NORTH ATLANTIC ▶

Johns-Manville Corp., 22 East 40th Street, New York, will take bids soon on general contract for new branch plant on 50-acre tract at Alameda Avenue and 283rd Street, Los Angeles, recently acquired, comprising two main one-story units, 100 x 70 ft., and 100 x 310 ft., with wing extension, 60 x 90 ft. Cost close to \$1,000,000 with equipment. **Stone & Webster Engineering Corp.**, 49 Federal Street, Boston, and 601 West Fifth Street, Los Angeles, is engineer; **Albert C. Martin, Higgins Building**, Los Angeles, is consulting architect.

Whitehead Metal Products Co., 304 Hudson Street, New York, a subsidiary of International Nickel Co., Ltd., 67 Wall Street, has leased large part of new three-story and basement building to be constructed at Charles, West 10th and Washington Streets, by **Beadleston & Woerz**, 291 West Tenth Street, and will occupy for new plant, totaling about 113,000 sq. ft. floor space. Work on superstructure will begin soon.

Southern Kraft Corp., 220 East 42nd Street, New York, a subsidiary of International Paper Co., same address, has approved plans for one-story addition to machine division at paper mill at Camden, Ark. Equipment will be installed to increase capacity about 75 tons daily. Cost close to \$600,000 with machinery.

Glen Cove Bottling Works, Glen Cove, L. I., has begun erection of one-story mechanical-bottling plant on site in new industrial district of municipality, recently acquired. Cost about \$55,000 with equipment.

American Brake Shoe & Foundry Co., 230 Park Avenue, New York, has taken bids on general contract for one-story addition to branch plant on Macon Street, North Kansas City, Mo., for which superstructure will begin early in fall.

Superintendent of Lighthouses, St. George, Staten Island, New York, asks bids until Sept. 7 for quantity of 1 1/4-in. wrought iron stud link chain (Proposal 54671).

Horn Signal Mfg. Corp., 515 Greenwich Street, New York, manufacturer of automobile traffic signals and signal equipment, has arranged for sale of block of preferred stock, to total about \$170,000, portion of proceeds to be used for machinery installation and production expansion.

National Lead Co., 111 Broadway, New York, has arranged for purchase of tract of about four acres of land in vicinity of Trinity River, Dallas, Tex., as site for new metal-reclaiming and smelting plant, comprising several large one and multi-story units, furnaces, storage and distributing buildings and other structures. Cost over \$500,000 with equipment.

Commanding Officer, Watervliet Arsenal, Watervliet, N. Y., asks bids until Sept. 7 for quantity of black malleable iron castings, not machined (Circular 12).

B. T. Babbitt, Inc., 386 Fourth Avenue, New York, has plans for one-story addition to plant at Broadway and Vine Street, Albany, N. Y. Cost about \$45,000 with equipment.

Ferodo & Asbestos, Inc., Codwise Avenue, New Brunswick, N. J., manufacturer of asbestos and asbestos-cement products for industrial purposes, has approved plans for one-story addition, about 46,000 sq. ft. floor space. Cost close to \$350,000 with equipment. Company is a subsidiary of **Keasbey & Mattison Co.**, Ambler, Pa.

New Jersey Optical Co., Inc., 280 Badger Avenue, Newark, N. J., manufacturer of eye-glass frames and other optical goods, has plans for new two-story and basement plant, 75 x 100 ft., at Irvington, N. J. Cost over \$50,000 with precision machinery, grinding equipment, etc. **Lockwood, Greene Engineers, Inc.**, 30 Rockefeller Plaza, New York, is engineer.

Commanding Officer, Ordnance Department, Frankford Arsenal, Philadelphia, asks bids until Sept. 7 for one automatic vertical spindle milling machine (Circular 123), one semi-automatic motor-driven milling machine (Circular 124), six gages (Circular 123), 21,150 steel forgings (Circular 116); until Sept. 8 for one semi-automatic end trimming machine (Circular 86), quantity of steel spring rod bolts (Circular 120), quantity of milling cutters (Circular 121); until Sept. 10 for two automatic shell-boring machines (Circular 125); until Sept. 13 for one motor-driven automatic gaging machine (Circular 81).

Board of Education, Eleventh and Washington Streets, Wilmington, Del., asks bids on general contract until Sept. 13 for new three-story T-shaped vocational school at Fourteenth and Market Streets. Mechanical units will include foundry, machine shops, general metal-working and plumbing shops, automobile shop, welding shop and other departments. Cost over \$500,000 with equipment. **E. William Martin, duPont Building**, is architect.

Kaiser & Co., Inc., Mahanoy City, Pa., brewer, has let general contract to **F. C. Kuick & Co.**, Pottsville, Pa., for four-story brewing plant, 50 x 90 ft. Cost close to \$175,000 with equipment. **William F. Koelle & Co.**, 1633 Race Street, Philadelphia, are engineers.

◀ BUFFALO DISTRICT ▶

Automatic Voting Machine Corp., Jones Street, Jamestown, N. Y., has let general contract to **Haas Construction Co.**, 1001 Monroe Street, for one-story addition. Cost close to \$50,000 with equipment. **Beck & Tinkham, Bailey Building**, are architects.

Buffalo General Electric Co., Electric Building, Buffalo, has authorized plans and surveys for new steam-electric generating station, with installation to include a 75,000-kw. turbo-generator unit and accessories, high-pressure boilers and other primary equipment. Cost close to \$8,000,000. Work will begin this fall and completion is scheduled early in 1940. Company will make extensions in transmission lines for connection of new plant with present high-tension system.

Flinkkote Co., 198 Mill Street, Lockport, N. Y., manufacturer of roofing products, has let general contract to **J. O. Ross Engineering Corp.**, Empire Building, Pittsburgh, for one-story addition, to be equipped to increase capacity about 25 per cent. Cost over \$75,000, of which about \$50,000 will be used for equipment.

◀ NEW ENGLAND ▶

Wallingford Steel Co., Wallingford, Conn., has let general contract to **C. F. Wooding Co.**, Wallingford, for one-story addition, 100 x 200 ft., to be used primarily for storage and distribution. Cost over \$50,000 with equipment.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 10 for one motor-driven upright drill press for Boston or Philadelphia Navy Yard (Schedule 1487).

Winter Brothers Co., Wrentham, Mass., manufacturer of taps, dies and kindred cutting tools, has let general contract to **W. H. Barker**, 4 Cohannet Street, Taunton, Mass., for one-story and basement addition, 80 x 90 ft. Cost over \$30,000 with equipment. Company is affiliated with **National Twist Drill & Tool Co.**, 6522 Brush Street, Detroit.

Commanding Officer, Ordnance Department, Watertown Arsenal, Watertown, Mass., asks bids until Sept. 8 for quantity of aluminum castings (Circular 46).

Connecticut Telephone & Electric Corp., Meriden, Conn., manufacturer of automotive equipment, signalling devices and

systems, etc., has arranged for a merger with **Air Devices, Inc.**, 60 East 25th Street, Chicago, manufacturer of aircraft equipment. Last noted company will remove plant from Chicago to Meriden, where facilities will be expanded and production concentrated in future.

City Council, Peabody, Mass., plans rebuilding of portion of municipal electric power plant on Endicott Street, recently damaged by fire. Loss close to \$30,000 with equipment.

◀ WASHINGTON DIST. ▶

Bureau of Yards and Docks, Navy Department, Washington, asks bids (no closing date stated) for automatic combustion control equipment and system for oil-fired watertube boiler in power house at Naval Operating Base, Norfolk, Va. (Specifications 8543).

American Zirconium Corp., 6410 St. Helena Avenue, Baltimore, manufacturer of metallic oxides and kindred products, has plans for one-story addition. Cost close to \$30,000 with equipment.

General Purchasing Officer, Panama Canal, Washington, asks bids until Sept. 7 for one drilling machine, one engine lathe, one twin unit gasoline and oil pump, 100 sets draft gear springs, quantity of machine bolts, steel range boilers, hinges and other equipment (Schedule 3283); until Sept. 9 for one concrete mixer, quantity of gate valves, check valves, pressure reducing valves, brass or bronze pipe fittings, malleable iron fittings, malleable iron unions and other equipment (Schedule 3284).

City Council, Chesapeake City, Md., plans installation of a 75,000-gal. elevated steel tank and tower, 100 ft. high, in connection with extensions and improvements in municipal water system, for which a fund of \$62,000 is being arranged. **J. B. McCrary Engineering Co., Inc.**, Rosenberg Building, Roanoke, Va., is consulting engineer.

Purchasing Officer, Department of Interior, Washington, asks bids until Sept. 8 for one electric arc welder (Proposal 2955).

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 7 for one screw type dual-drive pump (Schedule 1488) for Sewall's Point, Va., yard; 700 thermostat elements (Schedule 1537) for Portsmouth, N. H., Navy Yard; until Sept. 14 for quantity of cleaners and platers' casting brushes (Schedule 1498), 29,210 gas cylinders (Schedule 1481), quantity of steel wire nails (Schedule 1499), for Eastern and Western Navy Yards.

Commanding Officer, Washington Quartermaster Depot, Washington, asks bids until Sept. 20 for 24 gasoline engine-driven electric generating sets for Camp Custer, Mich., and Fort Leavenworth, Kan. (Proposal 24).

◀ SOUTHWEST ▶

Wuestling Packing Co., 3959 Garfield Street, St. Louis, meat packer, has let general contract to **Vickery Contracting Co.**, 1031 Commodore Street, Richmond Heights district, for one-story addition, 40 x 86 ft. Cost close to \$30,000 with equipment. **A. J. Johnson**, 1027 Big Ben Road, Richmond Heights, is architect.

Keasbey & Mattison Co., Ambler, Pa., manufacturer of corrugated asbestos-cement roofing, siding, pressure pipe, etc., has let contract to **United Engineers & Constructors, Inc.**, 1401 Arch Street, Philadelphia, for new one-story plant, 120 x 675 ft., with smaller adjoining units, at St. Louis, where site was acquired recently. Cost close to \$500,000 with equipment.

Common Council, Wagoner, Okla., plans extensions and improvements in municipal electric power plant. Cost about \$55,000 with equipment. Financing is being arranged.

Rock Island Refining Co., Duncan, Okla., plans early rebuilding of portion of oil refining plant recently destroyed by fire. Loss close to \$50,000 with equipment.

United States Engineer Office, Custom House, St. Louis, asks bids (no closing date stated) for power, control and lighting system at Lock and Dam No. 26, Mississippi River, near Alton, Ill., including power feeders, lighting equipment, portable lighting units, gasoline-electric standby power unit, electric tow-baulage unit, hand-operated traveling bridge crane, central control station electrical equipment.

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pumping machinery and complete auxiliary equipment (Circular 25).

Board of Regents, State Teachers' College, Commerce, Tex., asks bids on general contract until Sept. 7 for one and multi-story science and industrial arts building at institution. Cost about \$200,000 with equipment. Appropriation has been arranged. Shirley Simons, Tyler, Tex., is architect. H. A. Turner is secretary of board.

Atlantic Pipe Line Co., Magnolia Building, Dallas, Tex., plans expansion in bulk oil terminal at Atreco, near Port Arthur, Tex., including installation of three steel tanks, capacity 80,000 bbl., pumping machinery and auxiliary equipment.

◀ SOUTH ATLANTIC ▶

Miller Machinery & Supply Co., 126 N.E. 22nd Street, Miami, Fla., has taken out a permit and will proceed with erection by day labor of one-story and basement plant, 115 x 140 ft., on adjoining site, for storage and distribution. Cost close to \$40,000 with equipment. W. T. Effting, 2227 N.W. Fifty-first Terrace, is engineer.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 10 for one 24-in., motor-driven standard shaper for Naval Air Station, Pensacola, Fla. (Schedule 1510).

Orlando Utilities Commission, Orlando, Fla., asks bids until Oct. 4 for equipment for extensions in municipal electric power plant, including 10,000-kw. turbo-generator unit, 1500-hp. boiler and complete auxiliary equipment. Cost close to \$650,000. Robert & Co., Bona Allen Building, Atlanta, Ga., are consulting engineers.

◀ SOUTH CENTRAL ▶

Coca-Cola Bottling Co., 543 South Sixth Street, Paducah, Ky., has plans for one-story mechanical bottling plant at Madisonville, Ky. Cost close to \$55,000 with equipment. Casner & Fleming, Madisonville, are architects.

Dixie Metal Products Co., Leeds, Ala., plans rebuilding of machine shop, recently destroyed by fire. Loss about \$70,000 with equipment.

Director of Purchases, Tennessee Valley Authority, Knoxville, Tenn., asks bids until Sept. 10 for two oil purifier units of centrifuge and filter press type. (Req. 160,872).

Thomas Hogan Mfg. Co., 334 Burns Avenue, Winchester, Ky., manufacturer of gas grates and kindred equipment, has plans for rebuilding portion of plant, recently destroyed by fire. Thomas Hogan is head.

City Council, Bossier City, La., is considering construction of a municipal electric power plant. Cost close to \$200,000 with engine-generator unit, boilers and auxiliary equipment. Hoffman Fuller, mayor, is active in project.

Armour & Co., 2309 North First Avenue, Birmingham, meat packers, have taken out a permit for extensions and improvements in local plant. Cost close to \$75,000 with equipment. Main offices of company are at Union Stock Yards, Chicago.

◀ OHIO AND INDIANA ▶

Trailer Co. of America, Inc., 31st and Robertson Streets, Cincinnati, manufacturer of motor trailers and parts, has let general contract to H. & F. H. Hosea, Inc., 626 Broadway, for one-story addition. Cost close to \$35,000 with equipment.

Marquette Metal Products Co., 1145 Galewood Drive, Cleveland, manufacturer of diesel engines and parts, plans expansion and improvements, including installation of equipment for large increase in present capacity. Cost close to \$200,000, of which approximately one-half will be used for machinery purchases. Company also is securing substantial interest in Pump Engineering Service Corp., 12910 Taft Avenue, manufacturer of pumping machinery and parts, through purchase of block of 20,000 shares of stock. Marquette company has arranged for sale of 50,000 shares of preferred stock, part of proceeds to be used for purposes noted. William S. Jack is president.

United States Engineer Office, Zanesville, Ohio, asks bids until Sept. 13 for one motor-driven pumping unit and two gasoline engine-driven pumping units (Circular 9).

H. Gerstner & Sons, Cincinnati Street, Dayton, Ohio, manufacturers of tools, tool cases and other mechanical specialties, have let general contract to Rodberg Building

Co., Dayton, for two-story addition, 55 x 90 ft. Cost close to \$50,000 with equipment. W. Ray Yount, Third National Bank Building, is architect.

Contracting Officer, Materiel Division, Army Air Corps, Wright Field, Dayton, Ohio, asks bids until Sept. 7 for quantity of self-closing oil strainer nozzles, oil strainers, gasoline servicing nozzle strainers and flexible tips, etc. (Circular 119), quantity of rubber-metal gasoline hose with couplings and quantity of non-metallic gasoline hose (Circular 112); until Sept. 8 for quantity of miscellaneous airplane parts (Circular 118), 4200 aero spark plug adapters (Circular 124); until Sept. 9 for 3000 instrument lamps (Circular 120); until Sept. 16 for quantity of oil temperature regulator assemblies (Circular 115).

Haynes-Stellite Co., Lindsay Street, Kokomo, Ind., manufacturer of special tools, corrosion-resisting alloy products, etc., has plans for two-story addition, 75 x 132 ft. Cost over \$65,000 with equipment. Oscar Cook, Lincoln Building, is architect.

Contracting Officer, Quartermaster Corps, Quartermaster Depot, Jeffersonville, Ind., asks bids until Sept. 10 for 22 circular power saws for Lewiston, Idaho, Van Nuys and Redding, Cal., and other western points (Circular 431-22).

◀ WESTERN PA. DIST. ▶

McCann-Shields Paint Co., 27 Alexander Street, Pittsburgh, manufacturer of paints, varnishes, oils, etc., has plans for three-story plant unit on new site. Cost over \$65,000 with equipment. Herbert H. Cahoon, 337 Boulevard of Allies, is architect.

Westinghouse Electric & Mfg. Co., East Pittsburgh, has leased two-story building, 100 x 150 ft., to be erected on Commerce Street, Houston, Tex., by F. P. Kalb, 1415 Rosalie Street, Houston, for new factory branch, storage and distributing plant. Cost over \$50,000 with equipment. Houston offices of company are in Sterling Building.

Hammermill Paper Co., East Lake Road, Erie, Pa., has plans for one-story addition, 150 x 200 ft., primarily for storage and distribution. Cost close to \$75,000 with equipment.

◀ MIDDLE WEST ▶

International Harvester Co., 606 South Michigan Avenue, Chicago, has let general contract to J. L. Simmons Co., Inc., 4010 West Madison Street, for new plant on Brookville Road, Indianapolis, where company recently acquired tract of 75 acres. It will consist of a main one-story unit, 440 x 825 ft., and one-story foundry, 50 x 193 ft., with power house adjoining. Other units for miscellaneous service, storage and distribution will be built at later date. New plant will be used for manufacturer of gasoline engines for company motor trucks, including parts production and assembling. Cost about \$3,500,000 with equipment. Plant is scheduled to be ready for operation next February.

Ceco Steel Products Co., 1926 South Fifty-second Avenue, Cicero, Chicago, formerly operated as a division of Concrete Engineering Co., will soon begin superstructure for initial unit of new plant on local tract of about 20 acres lately acquired, and will carry out project by day labor. It will be one-story, 325 x 350 ft., fronting on 58th Avenue and West 26th Street. Cost over \$375,000 with equipment.

Jacob Schmidt Brewing Co., 382 West Seventh Street, St. Paul, Minn., has let general contract to W. W. Magee Co., 118 West Central Avenue, for one-story addition, primarily for storage and distribution. Cost close to \$40,000 with equipment.

City Council, West Liberty, Iowa, asks bids until Sept. 14 for extensions and improvements in municipal electric power plant, including new 450-hp. diesel engine unit and auxiliary equipment.

E. I. du Pont de Nemours & Co., Inc., duPont Building, Wilmington, Del., Cellophane Division, has concluded arrangements for purchase of tract of about 400 acres near Clinton, Iowa, as site for new plant, to consist of several one and multi-story units, with power house, machine shop, pumping station, storage and distributing buildings and miscellaneous structures, totalling about 20 acres of floor space in all. Facilities will be provided for employment of 500 operatives. Cost over \$1,500,000 with equipment.

Hiram Walker, Gooderham & Worts, Peoria, Ill., liquor distillers, have let general contract to Jobst & Sons, Inc., Lehmann Boulevard, for four-story addition, 150 x 250 ft., for storage and distribution. Cost about \$250,000 with equipment. Smith, Hinchman & Grylls, Marquette Building, Detroit, are architects and engineers.

◀ MICHIGAN DISTRICT ▶

Briggs Mfg. Co., 11631 Mack Avenue, Detroit, has acquired a tract of about 17 acres on Connors Avenue, vicinity of Mack and Warren Avenues, improved with a number of buildings, heretofore held by Hudson Motor Car Co., but not used for production by that organization. Briggs company will occupy in near future for expansion, primarily in connection with production of parts for automobile bodies.

Mount Clemens Metal Products Co., Mount Clemens, Mich., recently organized with capital of \$100,000 to manufacture metal fasteners and other metal specialties for automobile service, has taken over former local one-story building of Copony Sign Co., and will improve and equip at once for new plant. Company is headed by F. G. Richardson, president; and Frank McLaughlin, secretary and general manager. Albert Glass will be superintendent at plant.

Michigan Bumper Corp., Grand Rapids, Mich., manufacturer of automobile bumpers and kindred automotive equipment, has arranged for removal of plant of its subsidiary Oldberg Mfg. Co., manufacturer of automobile parts, from 2667 East Grand Boulevard, Detroit, to a new building at Grand Haven, Mich., where operations will be concentrated and expanded in future.

Grand Rapids Stamping Division, General Motors Corp., Grand Rapids, Mich., manufacturer of metal stampings for automobile service, has let general contract to Barnes Construction Co., 1310 Chicago Street, S.W., for one-story addition, 115 x 375 ft. Cost over \$175,000 with equipment.

Pontiac, Mich., has plans under consideration for new municipal electric plant, according to city manager's office.

◀ PACIFIC COAST ▶

Rheem Mfg. Co., Chesley Street, Richmond, Cal., manufacturer of steel barrels, drums, etc., has awarded general contract to Lindgren & Swinerton, Inc., 605 West Olympic Boulevard, Los Angeles, for one-story addition to branch plant at 4361 Firestone Boulevard, South Gate, Los Angeles, 100 x 220 ft. Cost about \$90,000 with equipment.

Bureau of Reclamation, Denver, Colo., asks bids until Sept. 15 for three motor-driven pumping units and accessory equipment, for installation in Owyhee Ditch pumping plant, Owyhee Project, Oregon-Idaho (Specifications 968-D); until Sept. 16 for three 60,000-lb. capacity, double-drum radial gate hoists, for installation in headworks, Gila Valley Canal, Imperial Dam, All-American Canal System (Specifications 969-D).

Johnston Fruit Co., Quinientos Street, Santa Barbara, Cal., fruit packer, plans one-story addition to main packing plant, on adjoining tract of land, recently acquired. Cost over \$50,000 with mechanical-handling, loading and other equipment.

Byron Jackson Co., Carlton and Sixth Streets, Berkeley, Cal., manufacturer of pumping machinery and parts, oil well equipment, etc., plans rebuilding of portion of branch plant at Visalia, Cal., recently damaged by fire. Loss close to \$40,000 with equipment.

Sunset Electric Co., 300-12 Westlake Street North, Seattle, electrical equipment and supplies, has let general contract to A. W. Larson, 4007 Fortieth Street, S.W., for two-story addition, 90 x 108 ft., primarily for storage and distribution. Cost close to \$50,000 with equipment. Jones & Stanley, Medical Arts Building, are architects.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Sept. 10 for one motor-driven brake press and one set of dies (Schedule 1478) for Puget Sound, Wash., Navy Yard; until Sept. 14 for quantity of metal litters (Schedule 1497) for Mare Island, Cal., Navy Yard; for one bench-type lathe (Schedule 1482) for San Diego, Cal., Naval Aircraft Station.

Pacific Marine Products Corp., Astoria, Ore., manufacturer of mechanical equipment, plans rebuilding of portion of plant, recently destroyed by fire. Loss about \$75,000 with machinery.

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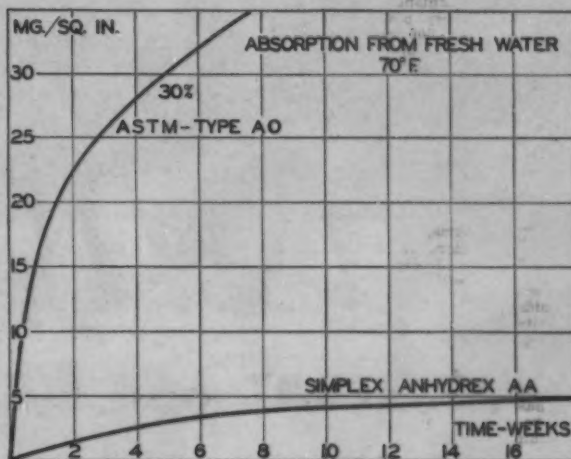
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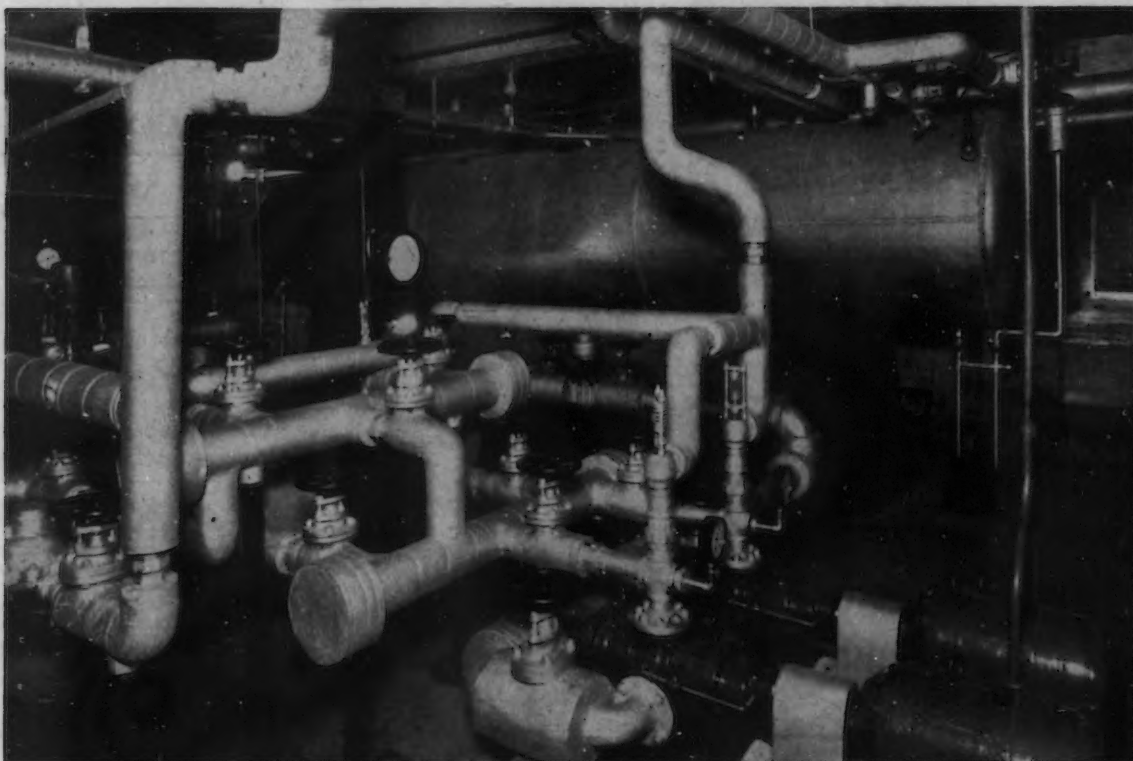
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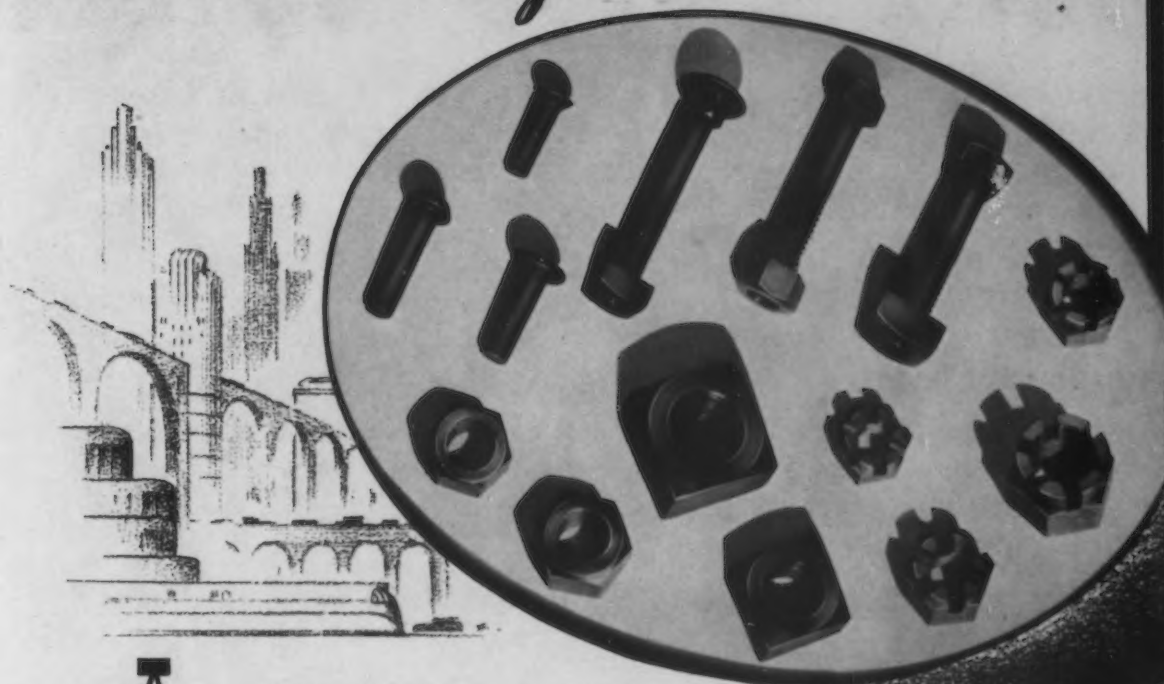


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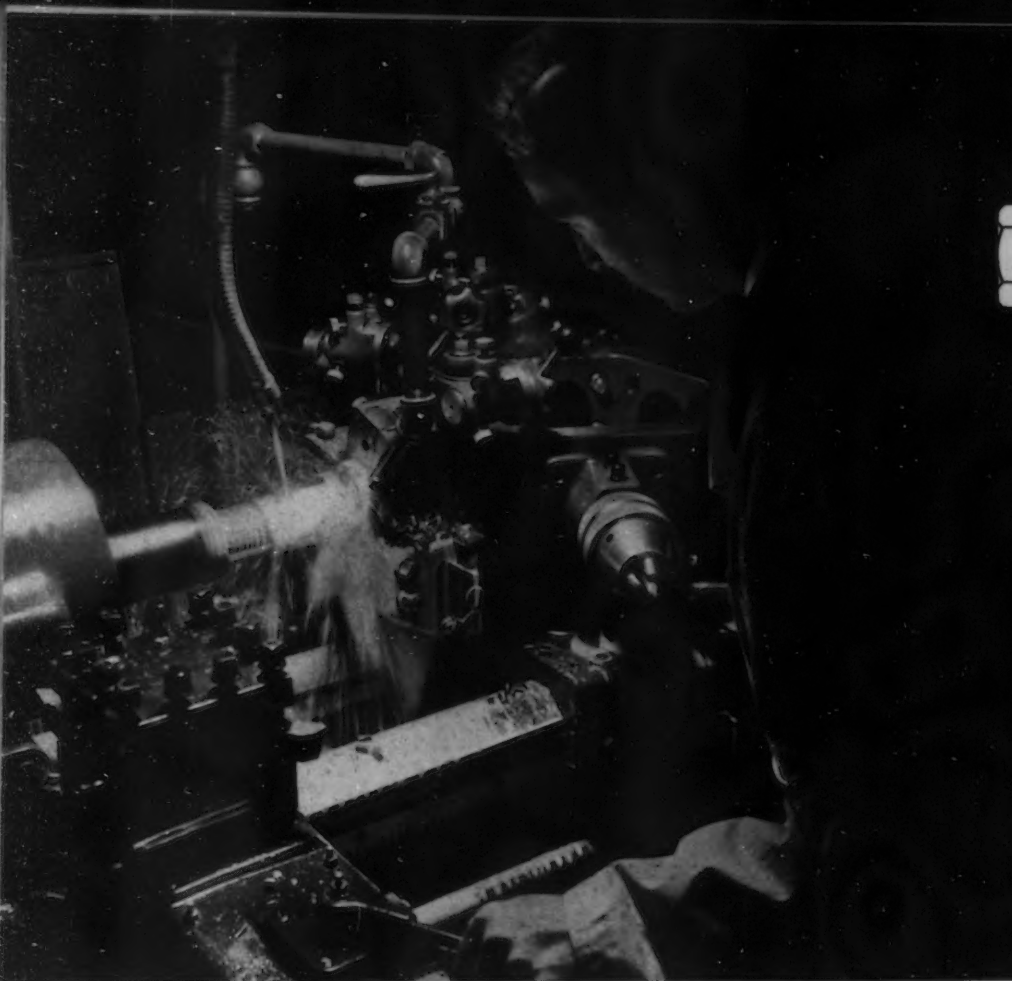


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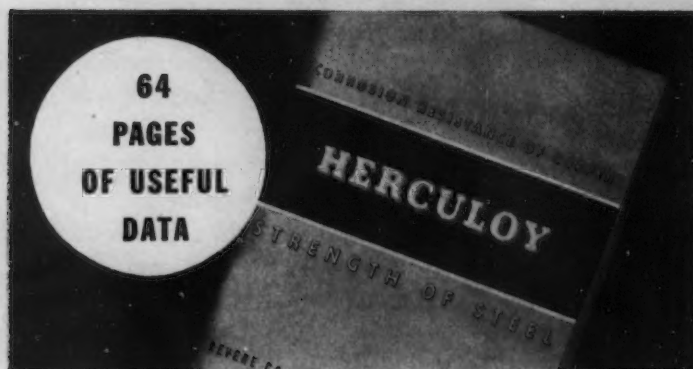
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All these results of modern industrial gas heating operations mean extra profits for users everywhere. Investigate Gas for your heating operations. Your gas company will gladly give you complete information without obligation. Let Gas earn new profits for you!

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New Industrial Literature

INDICATING AND RECORDING INSTRUMENTS.—C. J. Tagliabue Mfg. Co. Fifty-six page book listing complete data on indicating and recording controllers for temperature and pressure. Illustrations show how these pressure spring instruments operate. Price list included. Bulletin 9-84.

BRAZING SINTERED CARBIDE TOOLS.—Firth-Sterling Steel Co. Booklet covers the use of Firth Braze-Rite furnaces for brazing sintered carbide tools. Describes method of brazing, and includes specifications of furnaces. Bulletin 9-85.

HACK SAW BLADES.—Victor Saw Works, Inc. Booklet on the selection and applications of hack saw blades. Tells how to select the proper blade for various metals and how to avoid excessive blade breakage. Bulletin 9-86.

PICKLING.—E. F. Houghton & Co. Thirty-two page handbook which discusses the variations in metals as they affect pickling, the common practices and the established theories underlying them. Includes engineering data of value to men in charge of pickling operations, and describes Acitrol, a new pickling inhibitor. Bulletin 9-87.

FORGED FLANGES.—Kropp Forge Co. Stock List No. 125 which contains complete dimensions and weights of boiler flanges, tank flanges, etc., and includes facing details, standard drilling templates, bursting pressures and other valuable flange data. Bulletin 9-88.

MERCURY SWITCHES.—Durakool, Inc. Newly issued bulletin No. 500 describes mercury switches with metal cases in which an oily liquid is substituted for hydrogen in order to permit use of metal cases. Will operate with less than 4 deg. motion. Operating characteristics and application data included. Bulletin 9-89.

HOISTING EQUIPMENT.—Yale & Towne Mfg. Co. Catalog covers chain hoists, trolleys and similar equipment in capacities up to 40 tons. In addition, the publication contains information regarding lubrication and maintenance of this class of equipment. Bulletin 9-90.

DIE SETS.—F. C. Danneman Co. Bulletin announces a new line of die sets, in both reverse and regular types, covering sizes from 3x4 in. to 15x16 in. Includes specifications and prices. Bulletin 9-91.

SPEED REDUCERS.—Foote Gear Works, Inc. General catalog giving prices, specifications and engineering data on worm and herringbone gear speed reducers. Also includes a brief listing of various types of flexible couplings. Bulletin 9-92.

CONCRETE MIXERS.—Blaw-Knox Co. Catalog No. 1582 covering Blaw-Knox

Trukmixers and agitators. A section is devoted to describing the service rendered by Blaw-Knox Co. to the ready-mixed concrete industry. Bulletin 9-93.

REFRACTORIES.—Quigley Co., Inc. Bulletin describes "Insulcrete," a light weight, cellular insulating refractory used for direct exposure to flame and furnace gases up to 2500 deg. F. Another bulletin illustrates "Hearth-Crete," a chrome base, castable refractory for building monolithic furnace bottoms, burner blocks, etc. Bulletin 9-94.

PROCESS CONTROL.—Foxboro Co. Thirty-two page booklet describes a system of automatic control of temperature, pressure, level and flow in continuous processes, and is illustrated with photographs of typical applications. Bulletin 9-95.

METAL CUTTING SAWS.—E. C. Atkins & Co. Bulletin No. KK-1 describing various types of power hack saws in both push-cut and draw-cut styles. Includes specifications, prices and table of recommended blade speed for different classes of metal. Bulletin 9-96.

BRASS AND COPPER FORMS.—T. R. Conklin Brass & Copper Co., Inc. Stock List No. 12 giving complete information on thickness, weight, etc., of various sized brass sheets, rods, tubes, wire and accessories. Also covers Muntz metal products. A comprehensive table of chemical and physical properties is also included. Bulletin 9-97.

pH MEASURING APPARATUS.—Leeds & Northrup Co. Booklet describing equipment used to make hydrogen ion concentration measurements. Gives characteristics of measuring electrodes and schematic drawings of potentiometer connections. Bulletin 9-98.

MANGANESE STEEL WELDING.—Stulz-Sickles Co. Booklet explains method of welding 11 to 14 per cent manganese steel and discusses uses of this material. Bulletin 9-99.

STEEL TUBES.—Globe Steel Tubes Co. Illustrated bulletin describing the Ithrigizing process, a method of rendering ferrous metals resistant to corrosion, heat and wear. Descriptive text and physical properties, discussion of various resistances and list of applications as well as before and after photographs are included. Bulletin 9-100.

LABORATORY EQUIPMENT.—Precision Scientific Co. Condensed catalog of constant temperature laboratory equipment. Illustrated and includes dimensions, descriptive text and diagrams. Bulletin 9-101.

PRESSES.—Charles F. Elmes Engineering Works. Bulletin describing and illustrat-

ing high speed hydraulic drawing press, adjustable high speed duo drawing press, heavy duty high speed hydraulic forming press and high speed hydraulic forging, piercing and forming press. Tables of specifications are included. Bulletin 9-102.

PLATING EQUIPMENT AND SUPPLIES.—Crown Rheostat and Supply Co., 176-page catalog containing formulae and instructions for plating and coloring of metals; extensive data on chemicals used in electroplating and metal finishing; numerous reference tables; and technical data relative to the complete Crown line. Bulletin 9-103.

STEEL FACTORY TRUCKS.—All Steel Welded Truck Corp. Folder illustrating and describing various types of factory trucks. Specifications are included. Bulletin 9-104.

POWER SCRAPER.—Anderson Brothers Mfg. Co. Bulletin illustrating advantages of power scrapers. Descriptive text is included as is table of specifications. Bulletin 9-105.

MERCURY ARC POWER RECTIFIERS.—Allis-Chalmers Mfg. Co. Bulletin describing the construction and operation of mercury arc rectifiers for converting alternating current to direct current. Illustrated with typical installations and diagrammatic drawings. Bulletin 9-106.

TUBULAR STEEL STANDS.—Sherman Manson Mfg. Co. Bulletin describing and illustrating tubular steel stands for typewriter and other business machines. General specifications are included. Bulletin 9-107.

CAST IRON PULLEYS.—Link-Belt Co. Booklet covering cast iron pulleys for power transmission purposes. Data are included on solid and split, single and multiple arm machine-molded pulleys with and without rubber lagging. Includes list prices. Bulletin 9-108.

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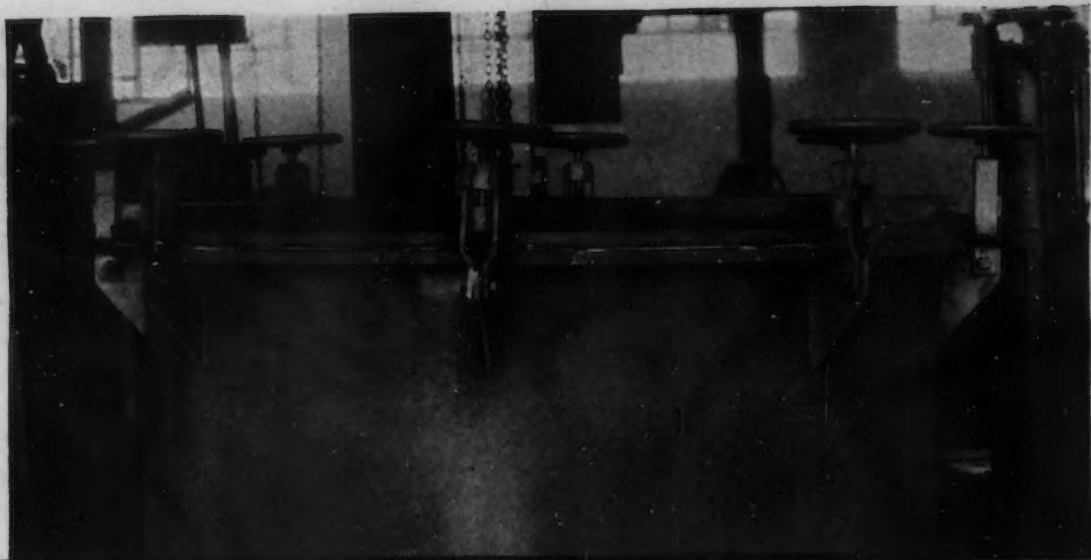
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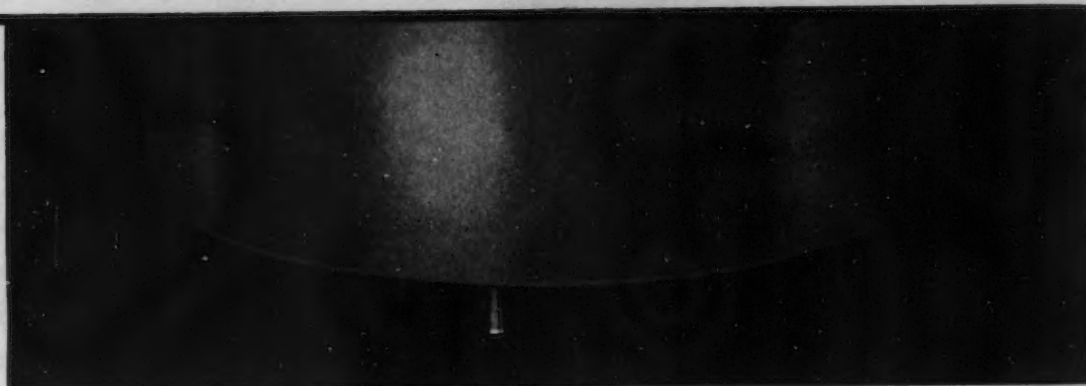
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IS WORKING MANY PLANTS

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PARKER "pulls the switch" on RUST

IT PAYS TO USE
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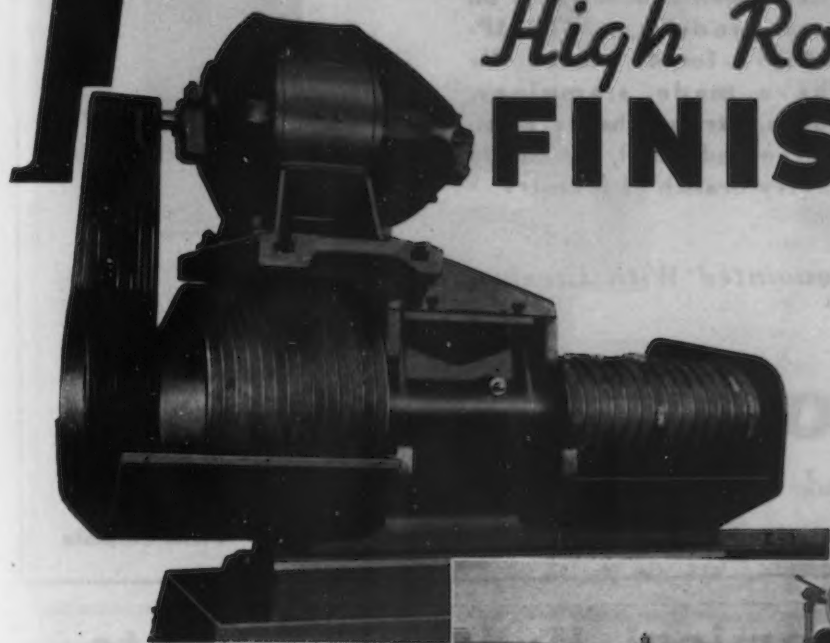
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1 REASON *for* High Roll FINISH...



No one realizes more than we at the Landis Tool Company that many factors contribute to grinding rolls to an exceedingly high finish.



Take the matter of headstock design. One of the illustrations on this page shows the headstock used in connection with the Landis Type B Hydraulic Roll Grinders. Being a 100% multiple V belt drive unit it operates with no appreciable vibration. As a consequence, the roll is driven with absolute smoothness which is a big step in the direction of that better-than-average

finish everyone desires.

Numerous other features of the Landis Type B Hydraulic Roll Grinders play their part too in the securing of high finishes. We cannot tell you about them here but the catalog does. You should have a copy or better still, why not discuss this matter fully with the Landis representative the next time he calls.

246

LANDIS TOOL CO.
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We construct complete hydraulic Power Stations with Compressed-Air Accumulators, built without piston or float, Pressure Pumps, Pipe Lines and Controls. We have supplied up to the present accumulators with an approximate total capacity of

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a proof of the excellent reputation our accumulators enjoy.

We construct complete Press Works, with all auxiliary devices; Hydraulic Forging Presses, Frame Presses, Hydraulic Tube and Rod Extrusion Presses, etc.

When visiting the Dusseldorf Exhibition "Schaffendes Volk" open from May until October, 1937, do not fail to look up the stand of HYDRAULIK G.m.b.H. in the exhibition room No. 15 reserved for Machine Tools.

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For further information apply to Messrs. Seamless Steel Equipment Corporation, 39 Broadway, New York

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LATHES • CHUCKERS



Designed to work up to 10½" diameter held on centers or in chucks, these machines are built to deliver a fine degree of accuracy.

Features like holding fixtures, safety controls, lubrication, and cooling of cutting tools are automatic while indexing is especially smooth and quick. Variable speeds for the spindles are provided and independent attachments can be purchased as needed.

So many combinations are available that we suggest you send samples or prints of your work for a detailed engineering study and report. There's no obligation for this service.

THE BAIRD MACHINE COMPANY
BRIDGEPORT, CONN.

We Defy You

**to find a machine in your
plant that can shake one of
these nuts loose**

A pretty broad challenge—but we know it can't be met, for Vibration just cannot loosen an "Unshako", once it has been put in place. Yet there's not the slightest difficulty in removing one of these nuts with an ordinary wrench.

"Unshako" has been proven in actual service tests in almost every type of industry where vibration has been most severe. In every case the ingenious built-in locking ring has never failed to hold it tight.

Fill in and mail the coupon—get the complete story about "Unshako," the nut that can't shake loose.

Fig. 1510
Pat'd & Pats.
Pending



The Nut That Can't Shake Loose

Standard Pressed Steel Co.
Box 523, Jenkintown, Pa.

I want to hear more about "The Nut that won't shake loose." Send me full details.

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Alloy Steel Back
 Patented Electric Weld.

For
leads on new
industrial literature
See page 123

JUST BETWEEN US TWO

Musical Highbrow Takes Unfair Advantage

WHEN George Appel, of Witte & Burden, Detroit, learned that the Bump pump wasn't a sump pump, he was inconsolable until he found that up in Seneca Falls the Rumsey people make the Rumsey sump pump.

Rumsey-ump-pump—Rumsey-ump-pump. Its haunting rhythm reminds him, he says, of the "Wurm" or dragon leitmotif in Wagner's Ring operas. We wouldn't know, as even Benny Goodman is over our head.

However, our preference is for the simpler trochee beat, and the fact that a Texas self-service grocery calls itself the "Helpy-Selfy Store" gives us courage to suggest that the Rumsey people call it the *Rumsey sumpsy pumpy*.

He Says He Doesn't Know

WE ask for help in finding out what a foundry fettling department is, and W. H. Riecks of the Detroit Stoker Co., Monroe, Mich., throws us an anchor:

"We don't know and we have operated a foundry since 1898. Webster says—'Fettle—to make preparations; to put things in order; to do trifling business.' Whenever heard of a foundry business being 'trifling'!"

But He Knows

BUT along comes John Howe (Taylor-Wharton) Hall with the answer:

"I had supposed that ours was the only shop in the country where the term 'fettling' is used, and am much interested in your comment on it."

"Our steel plant was originally designed and erected under the supervision of men sent over by Sir Robert Hadfield from Sheffield, England. The department where we have cleaning, chipping and rough grinding has always been called the Fettling Shop. I think properly it applies to chipping, cutting off heads, etc."

Takes Pangs Out of Parting

DESPITE the fact that, as we never let you forget, more than four out of five Iron Age subscribers renew, the fractional fifth usually leaves with the briefest goodbye. So it is a pleasure to meet a man like Alger F. Russell of Meadville, Pa., who tempers the pangs of parting by writing graciously:

"Do not renew my subscription. Have enjoyed the magazine while I've been in business, but I've retired. Therefore, *adieu* vale!"

Orchid

DATES are dull. The passage of time is most effectively registered by recalling events. Therefore, an orchid to the writer of The Phosphor Bronze Smelting Company's inside front cover ad in the Aug. 5 issue, for this:

"Custer's 'last stand' was NEWS, not history, when the founder of this company brought one of industry's most valuable metals to the United States."

Dog Bites Teeth

ALWAYS alert for curiosia, Joe Fuller of our field staff tells us that the owner of the Washington Hotel in Aberdeen, Wash., has a Boston bull whose upper teeth fell out.

His owner had a set of uppers made. The dog won't eat with them, preferring to gum it, but if you are interested in dogs with false teeth, he will keep them in while you look at him, that is, if you don't look for more than a minute.

Which gives us an excellent opportunity to remark that the big names in the dental equipment manufacturing field—White, Ritter, Betz, Weber, et al.—are members of the one big happy family. They use plenty of metal and metal-working equipment. (Adv.)

Inaptronym

THE most inappropriate name we have heard lately is that of the Diana Plug Company, Natural Bridge, N. Y. The association of "Diana" and "plug" is a crime against a lady of beauty and grace. Why this wooden plug maker picked on her when he had such a natural in Pegasus, who was a plug himself, is beyond us. Or, for that matter, why not Troy, whose downfall was caused by a wooden plug?

—A.H.D.

You can't bust this one



Fig. 509



SQUARE HEAD SET SCREW



Fig.
1507

In actual test, we blind tapped a hole in this piece of steel. An "UNBRAKO" was screwed into it and forced through the bottom. The steel split three ways, yet the "UNBRAKO" didn't show a scratch.

THAT'S STRENGTH—when any screw will do that and come out undamaged! That's strength which you can use to meet the hazards of even ordinary service; it's a demonstration of the extra toughness that withstands severest strains.

Send for a sample and just try to break it, yourself. Give it a fair test. Then, switch to "UNBRAKOS" where you can't afford failures!

Catalog, upon request.

STANDARD PRESSED STEEL CO.

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Established 1883

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STAMPINGS



A distinctly new type of insulating brick, weighing about 18 ozs. each.

Most efficient for furnace construction; has extra low Thermal conductivity.

Cuts easily and compacts without breaking under pressure behind buckstays.

Cushions metal furnace bindings against expanding brickwork.

Recommended for temperatures up to 2000°F. for direct exposure and behind refractory brick linings.

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LIGHT WEIGHT

INSULATION BRICK



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New York State: Syracuse Supply Co., Syracuse, N. Y.; also Buffalo, N. Y.

Pennsylvania: Arch Machinery Co., 1929 Park Bldg., Pittsburgh, Pa.
California: C. F. Bulotti Machinery Co., 829-831 Folsom St., San Francisco, Calif.
Eccles & Davis Machinery Co., Inc., 1910 Santa Fe Avenue, Los Angeles, California.
Arthur Jackson Machine Tool Company, 66 Front Street West, Toronto 2, Canada, and 437 Grosvenor Avenue, Westmount, Que.

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One to Six Spindles

Tapping Attachments and Multiple Heads

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MULTIPLE SPINDLE

CHUCKING MACHINES

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LUCAS "PRECISION"

Horizontal Boring, Drilling and Milling Machine

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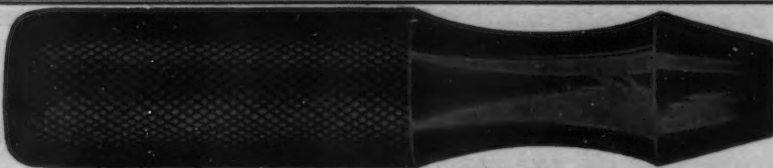
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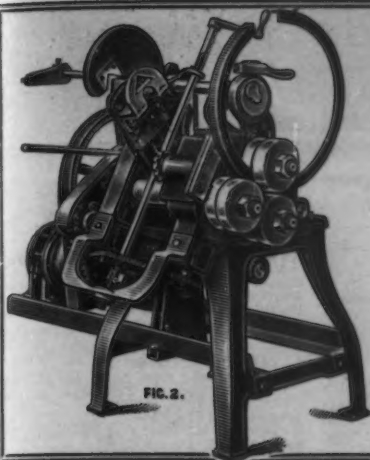
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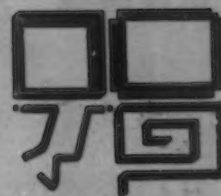
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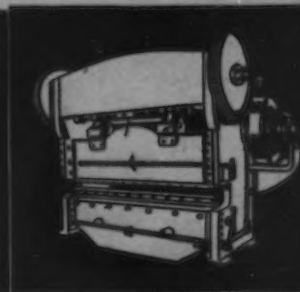
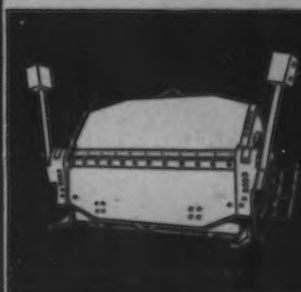
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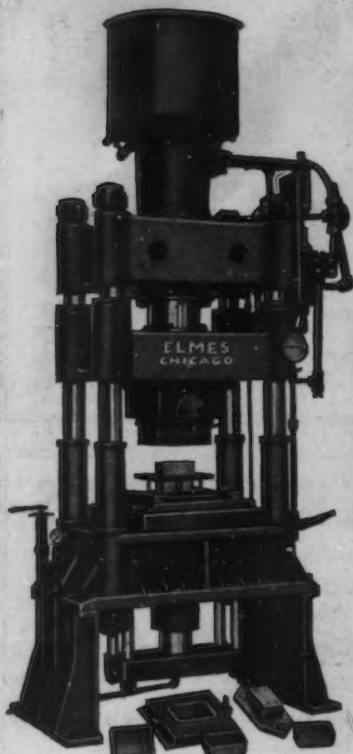
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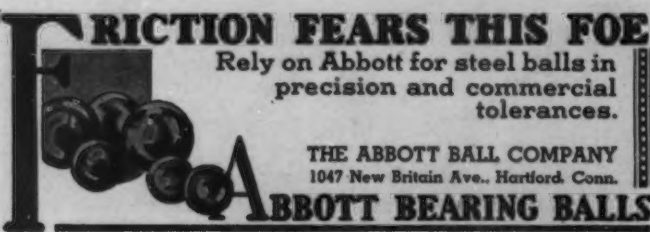
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 Oliver Iron & Steel Corp., Pittsburgh.
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 Russell, Burdall & Ward Bolt & Nut Co., Fort Chester, N. Y.

BOLTS—Special, Hot or Cold Upset
 Lamson & Sessions Co., The, Cleveland.
 Oliver Iron & Steel Corp., Pittsburgh.

BOLTS—Stove
 Blake & Johnson Co., The, Waterville, Ct.
 Lamson & Sessions Co., The, Cleveland.

BOLTS—Track
 Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Lamson & Sessions Co., The, Cleveland.
 Republic Steel Corp., Upson Nut Div., Cleveland, O.

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 Clark Bros. Bolt Co., Milldale, Conn.
 Erie (Pa.) Bolt & Nut Co.
 Helz & Helz, Inc., 33—34th St., Brooklyn, N. Y.
 Lamson & Sessions Co., The, Cleveland.
 Oliver Iron & Steel Corp., Pittsburgh.
 Republic Steel Corp., Cleveland, Ohio.
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 Oilgear Co., The, 1311 W. Bruce St., Milwaukee.

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 Beatty Mch. & Mfg. Co., 936—150th St., Hammond, Ind.
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 Du Pont de Nemours, E. I., & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.

CADMIUM PLATING PROCESS
 Du Pont de Nemours, E. I., & Co., Inc., Grasselli Chemicals Dept., Wilmington, Del.

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CARBIDE
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 Midvale Co., The, Nicetown, Phila., Pa.
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Ave., Detroit.

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Buffalo, N. Y.

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St., Milwaukee.

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Falls, Ohio.

Jones, W. A., Fdry. & Mch. Co., 4401

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Medart Co., The, St. Louis, Mo.

Morse Chain Co., Ithaca, New York.

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Cutler-Hammer, Inc., Milwaukee.

Dings Magnetic Separator Co., Milwaukee.

Stearns Magnetic Mfg. Co., 635 So. 28th

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N. Y. C.

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Durant Mfg. Co., Milwaukee, Wis.

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Veeder-Root, Inc., Hartford, Conn.

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Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.

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Harnischfeger Corp., 4401 W. National Ave., Milwaukee.
Industrial Brownhoist Corp., Bay City, Mich.
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Harnischfeger Corp., 4401 W. National Ave., Milwaukee.

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CRANES—Monorail
Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc., 402 Broadway, Muskegon, Mich.

CRANES—Jib
American Monorail Co., The, Cleveland.
Cleveland Tramrail Div. of The Cleveland Crane & Engng. Co., Wickliffe, Ohio.

CRANES—Locomotive
Harnischfeger Corp., 4401 W. National Ave., Milwaukee.
Industrial Brownhoist Corp., Bay City, Mich.
Ohio Locomotive Crane Co., The, Bucyrus, O.

CRANES—Monorail
American Monorail Co., The, Cleveland.
Cleveland Tramrail Div. of The Cleveland Crane & Engng. Co., Wickliffe, Ohio.

CRANES—Monorail
Euclid Crane & Hoist Co., The, Euclid, O.
Northern Engineering Works, Detroit.
Shaw-Box Crane & Hoist Div. Manning, Maxwell & Moore, Inc., 402 Broadway, Muskegon, Mich.

CRANES—Portable
Canton Fdry. & Mch. Co., Cleveland.

CRANES—Portable Electric
Automatic Transportation Co., Inc., 101 West 87 St., Chicago, Ill.
Baker-Baulang Co., The, 3175 W. 25th St., Cleveland.
Elwell-Parker Electric Co., The, Cleveland.

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Union Drawn Steel Co., Massillon, Ohio.

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Bay City Forge Co., Erie, Pa.

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American Pulverizer Co., 1439 Macklind Ave., St. Louis, Mo.
Jeffrey Mfg. Co., The, Columbus, Ohio.

CRUSHERS—Steel Turning
American Pulverizer Co., 1439 Macklind Ave., St. Louis, Mo.

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Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.
Tomkins-Johnson Co., The, Jackson, Mich.

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Davis Keyseater Co., 400 Exchange St., Rochester, N. Y.

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Cleveland (Ohio) Twist Drill Co., The.
Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit.

Morse Twist Drill & Mch. Co., New Bedford, Mass.
Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

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Tabor Mfg. Co., Phila.

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Heller Machine Co., 114 Liberty St., N. Y. C.

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Bardons & Oliver, Cleveland.
Landis Mch. Co., Inc., Waynesboro, Pa.

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National Tube Co. (U. S. Steel Corp. Subsidiary), Pittsburgh.

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DIE-FILING MACHINES
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Greenfield (Mass.) Tap & Die Corp.
Jones & Lamson Mch. Co., Springfield, Vt.
Landis Mch. Co., Inc., Waynesboro, Pa.
Murphy Machine & Tool Co., Detroit.

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Eastern Mach. Screw Corp., New Haven, Ct.
Jones & Lamson Mch. Co., Springfield, Vt.
Landis Mch. Co., Inc., Waynesboro, Pa.
Murphy Machine & Tool Co., Detroit.
National Acme Co., The, Cleveland.

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National Automatic Tool Co., Richmond, Ind.

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Cincinnati (Ohio) Bickford Tool Co., The.
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American Blower Corp., 6000 Russell St., Detroit.

American Foundry Equipment Co., The, 401 Byrkit St., Mishawaka, Ind.
Blaw-Knox Co., Pittsburgh.
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Lincoln Electric Co., The, Cleveland.
Maurath, Inc., 7400 Union Ave., Cleveland.
Una Welding, Inc., Cleveland, Ohio.

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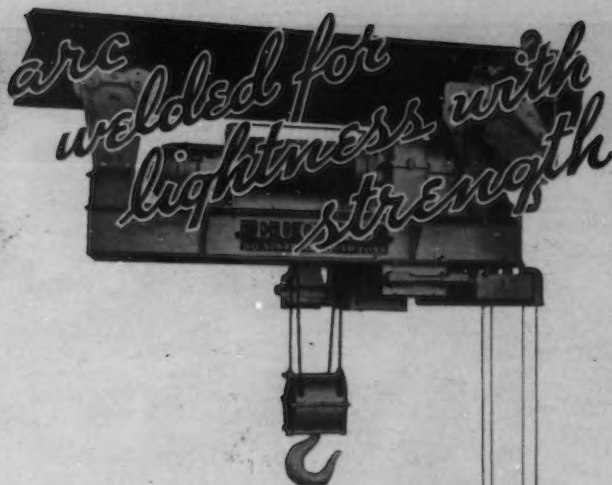
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- FERROCHROME**
Electro Metallurgical Sales Corp., 30 E. 42nd St., N. Y. C.
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Gleason Works, Rochester, N. Y.

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Lewis Foundry & Mch. Co., Pittsburgh.

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Michigan Tool Co., Detroit.

GEARMOTORS
Allis-Chalmers Mfg. Co., Milwaukee.
James, D. O., Mfg. Co., Chicago.

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GEAR SHAVING MACHINES
Michigan Tool Co., Detroit.

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Gleason Works, Rochester, N. Y.
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Richardson Co., The, Melrose Park, Ill.

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Gleason Works, Rochester, N. Y.
James, D. O., Mfg. Co., Chicago.

Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.
Simonds Mfg. Co., Pittsburgh.

GEARS—Herringbone
Farrel-Birmingham Co., Inc., Buffalo, N.Y.
Horsburgh & Scott Co., 5112 Hamilton Ave., Cleveland.

James, D. O., Mfg. Co., Chicago.
Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.

Simonds Mfg. Co., Pittsburgh.

GEARS—Non-Metallic
Boston Gear Wks., Inc., North Quincy, Mass.

Chicago (Ill.) Rawhide Mfg. Co., The, 1306 Elston Ave.
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James, D. O., Mfg. Co., Chicago.
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Simonds Mfg. Co., Pittsburgh.

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Boston Gear Wks., Inc., North Quincy, Mass.

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MACHINISTS' SMALL TOOLS

Starrett, L. S., Co., Athol, Mass.

MAGNESITE—Brick or Dead Burnt

Carborundum Co., The, Perth Amboy, N. J.

MAGNESIUM

Dow Chemical Co., The, 921 Jefferson Ave.,
Midland, Mich.

MAGNETS—Lifting

Cutler-Hammer, Inc., Milwaukee.
Electric Controller & Mfg. Co., The, Cleve.
Ohio Electric Mfg. Co., The, 5908 Maurice
Ave., Cleveland.

MALLETS—Rawhide

Chicago (Ill.) Rawhide Mfg. Co., The,
1306 Elston Ave.

MANDRELS—Expanding

Nicholson, W. H., & Co., 165 Oregon St.,
Wilkes-Barre, Pa.

MANGANESE METAL AND ALLOYS

Electro Metallurgical Sales Corp., 30 East
42nd St., N. Y. C.

MANHOLE FITTINGS AND SADDLES

Worth Steel Co., Claxmont, Del.

MANIFOLDS—Oxygen & Acetylene

Air Reduction Sales Co., 60 East 42nd
St., N. Y. C.

Linde Air Prods. Co., The, 30 East 42nd
St., N. Y. C.

MARKING MACHINES

Noble & Westbrook Mfg. Co., The, East
Hartford, Conn.

METAL SPECIALTIES

Crosby Co., The, Buffalo, N. Y.
Grammes, L. F., & Sons, Inc., Allentown,
Pa.

Toledo (Ohio) Stamping & Mfg. Co.
Torrington (Conn.) Company.

Truscon Steel Co., Pressed Steel Div.,
Cleveland.

Whitehead Stamping Co., 1809 W. Lafay-
ette Blvd., Detroit, Mich.

Worcester (Mass.) Stamped Metal Co.

METAL—Thermostatic Bimetal

Chaco, W. M., Co., 1605 Beard Ave., De-
troit.

METALS—Coating

Metals Coating Co. of America, Phila., Pa.

METERS—Electric Welding

Lincoln Electric Co., The, Cleveland.

METERS—Flow

Brown Instrument Co., The, Philadelphia,
Pa.

Leeds & Northrup Co., Philadelphia.

METERS—Water & Oil

Worthington Pump & Machinery Corp.,
Harrison, N. J.

MICA SCHIST

Edge Hill Silica Rock Co., New Bruns-
wick, New Jersey.

MICROMETERS

Starrett, L. S., Co., Athol, Mass.

MICROMETERS—Automatic, for Rolling

Mills
Haines Gauge Co., The, Phila., Pa.

MILLING MACHINES—Automatic

Brown & Sharpe Mfg. Co., Prov., R. I.
Cincinnati (Ohio) Milling Mch. Co., The.

Brown & Sharpe Mfg. Co., Prov., R. I.
Cincinnati (Ohio) Milling Mch. Co., The.

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Brown & Sharpe Mfg. Co., Prov., R. I.
Cincinnati (Ohio) Milling Mch. Co., The.

MOLYBDENUM

Climax Molybdenum Co., 500 Fifth Ave.,
N. Y. C.

MONEL METAL

International Nickel Co., Inc., The, 67
Wall St., N. Y. C.

MONORAIL SYSTEMS—Hand & Electric

American Monorail Co., The, Cleveland.
Cleveland Tramrail Div. of The Cleveland
Crane & Engng. Co., Wickliffe, Ohio.

MOTORS—Electric

Allis-Chalmers Mfg. Co., Milwaukee.
Century Electric Co., St. Louis, Mo.

Fairbanks, Morse & Co., Chicago.
General Electric Co., Schenectady, N. Y.

Harnischfeger Corp., 4401 W. National
Ave., Milwaukee.

Lincoln Electric Co., Cleveland.

Reliance Electric & Engineering Co.,
Cleveland.

Westinghouse Elec. & Mfg. Co., E. P'th.

MOTORS—Electric, Second-Hand, (See

Clearing House Section)

NAILS—Wire

American Steel & Wire Co. (U. S. Steel
Corp. Subsidiary), Chicago.

Columbia Steel Co. (U. S. Steel Corp.
Subsidiary), San Francisco, Calif.

Hassall, John, Inc., Clay & Oakland Sts.,
Bklyn., N. Y.

Pittsburgh (Pa.) Steel Co.

Wickwire Brothers, Cortland, N. Y.

Youngstown (Ohio) Sheet & Tube Co., The.

NICKEL

International Nickel Co., Inc., The, 67
Wall St., N. Y. C.

NICKEL ANODES—Rolled or Cast

Riverside (N. J.) Metal Co.

Seymour (Conn.) Mfg. Co.

NICKEL SILVER

Riverside (N. J.) Metal Co.

Seymour (Conn.) Mfg. Co.

NITROGEN

Air Reduction Sales Co., 60 East 42nd
St., N. Y. C.

NOZZLES—Sand Blasting

Norton Co., Worcester, Mass.

NUMBERING MACHINES—For Metal

Noble & Westbrook Mfg. Co., The, East
Hartford, Ct.

NUT MACHINERY—Automatic Cold

Pressed
Waterbury (Conn.) Farrel Foundry & Ma-
chine Co., The.

NUTS—Acorn

Republic Steel Corp., Upson Nut Div.,
Cleveland, O.

Russell, Burdall & Ward Bolt & Nut Co.,
Port Chester, N. Y.

NUTS—Castellated

National Acme Co., The, Cleveland.

Republic Steel Corp., Upson Nut Div.,
Cleveland, O.

Russell, Burdall & Ward Bolt & Nut
Co., Port Chester, N. Y.

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Co., Port Chester, N. Y.

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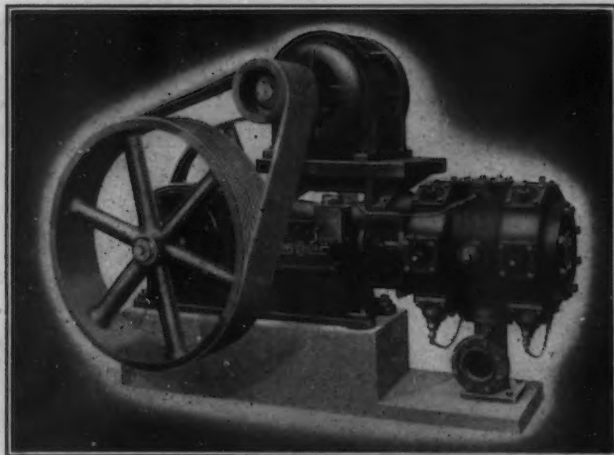


● Siegfried Markus, a German, was the father of the automobile. In 1875 he invented a gas motor driven vehicle which ran. Jarecki had been making valves for 23 years when Markus drove his strange contraption about the streets. Then, as now, Jarecki insisted on **ADDED STRENGTH for EXTRA DEPENDABILITY** in its valves. 85 years of honest manufacture are back of Jarecki Products.



JARECKI VALVES

JARECKI MANUFACTURING CO., Erie, Pa.



PENNSYLVANIA SINGLE-STAGE DOUBLE ACTING TIMKEN ROLLER MAIN BEARING COMPRESSOR

Designed For Heavy Duty Continuous Service

Furnished in sizes from 5 to 125 hp. for pressures from 15 to 150 lb.

Equipped with trouble-free *air cushion* valves.

All metal construction regulating mechanism completely eliminates frequent source trouble, replacements or repairs rarely required.

Overhead motor mounting illustrated provides compact unit occupying minimum floor space, reduces cost foundation.



PENNSYLVANIA PUMP & COMPRESSOR CO.

BUSHKILL PARK ROAD, EASTON, PENNA.

Products Index

POLISHING & BUFFING MACHINES—Automatic

Packer Machine Co., The, Meriden, Conn.

POLISHING MACHINES

Continental Machine Specialties, Inc., Minneapolis, Minn.

Packer Machine Co., The, Meriden, Conn.

POLISHING MACHINES—Bar

Medart Co., The, St. Louis, Mo.

POWER UNITS—Rotary

New Departure Div., General Motors Corp., Bristol, Conn.

PRECIPITATORS—Electrostatic Dust

Pangborn Corporation, Hagerstown, Md.

PRESS FEEDS—Automatic

Littell, F. J., Mch. Co., Chicago.

PRESSED METAL PARTS

Champion Sheet Metal Co., Inc., cor. Squires & Duane Sts., Cortland, N. Y.

Crosby Co., The, Buffalo, N. Y.

Stanley Works, The, New Britain, Conn.; Bridgeport, Conn.

Transue & Williams Steel Forging Corp., Alliance, Ohio.

Whitehead Stamping Co., 1669 W. Lafayette Blvd., Detroit, Mich.

PRESSED STEEL PARTS

Crosby Co., The, Buffalo, N. Y.

Lansing (Mich.) Stamping Co., So. Penn Ave. Parish Pressed Steel Co., Reading, Pa.

Toledo (Ohio) Stamping & Mfg. Co. Transue & Williams Steel Forging Corp., Alliance, Ohio.

Truscon Steel Co., Pressed Steel Div., Cleveland.

PRESSES—Automatic

Bliss, E. W. Co., Toledo, Ohio.

Henry & Wright Mfg. Co., The, Hartford, Conn.

Niagara Mch. & Tool Wks., Buffalo, N. Y.

V & O Press Co., Hudson, N. Y.

PRESSES—Baling

Galland-Henning Mfg. Co., Milwaukee.

PRESSES—Baling, Hydraulic

Baldwin-Southwark Corp., Southwark Div., Philadelphia.

Galland-Henning Mfg. Co., Milwaukee.

PRESSES—Coining

Bliss, E. W. Co., Toledo, Ohio.

Zeh & Hahnemann Co., Newark, N. J.

PRESSES—Drop—See Hammers—Drop

PRESSES—Foot

Baird Mch. Co., The, Bridgeport, Conn.

Niagara Machine & Tool Works, Buffalo, N. Y.

Waterbury (Conn.) Farrel Foundry & Machine Co., The.

PRESSES—Forging

Ajax Mfg. Co., The, Euclid, Ohio.

Hydraulik Gmbh, Duisburg, Germany.

Mesta Mch. Co., Pittsburgh.

Morgan Engineering Co., The, Alliance, O.

PRESSES—Forming and Bending

Cincinnati (Ohio) Shaper Co., The.

Drehs & Krump Mfg. Co., Chicago.

Niagara Mch. & Tool Wks., Buffalo, N. Y.

PRESSES—Friction Screw

Schatz Mfg. Co., The, Poughkeepsie, N. Y.

Zeh & Hahnemann Co., Newark, N. J.

PRESSES—Hydraulic

Baldwin-Southwark Corp., Southwark Div., Philadelphia.

Elmes, Chas. F., Engng. Wks., Chicago.

Farrel-Birmingham Co., Inc., Ansonia, Conn.

Hannifin Mfg. Co., Chicago.

Hydraulik Gmbh, Duisburg, Germany.

Lake Erie Engineering Corp., 88 Kenmore St., Buffalo, N. Y.

Mesta Mch. Co., Pittsburgh.

Morgan Engineering Co., The, Alliance, O.

Oilgear Co., The, 1311 W. Bruce, Milwaukee.

Wood, R. D., & Co., Philadelphia.

PRESSES—Power

Bliss, E. W. Co., Toledo, Ohio.

Baird Mch. Co., The, Bridgeport, Conn.

Cincinnati (Ohio) Shaper Co., The.

Drehs & Krump Mfg. Co., Chicago, Ill.

Farrel-Birmingham Co., Inc., Ansonia, Conn.

Hyman, Joseph, & Sons, Phila.

Manville, E. J., Mch. Co., Waterbury, Ct.

New Albany (Ind.) Mch. Mfg. Co.

Niagara Machine & Tool Wks., Buffalo, N. Y.

Pels, Henry, & Co., Inc., 90 West St., N. Y. C.

Schatz Mfg. Co., The, Poughkeepsie, N. Y.

Standard Machinery Co., Providence, R. I.

V & O Press Co., Hudson, N. Y.

Waterbury (Ct.) Farrel Fdry. & Mch. Co., The.

Zeh & Hahnemann Co., Newark, N. J.

PRESSES—Trimming

Bliss, E. W. Co., Toledo, Ohio.

Erie (Pa.) Foundry Co.

Niagara Mch. & Tool Wks., Buffalo, N. Y.

PULLEYS—Iron, Solid & Split

Falls Clutch & Mchry. Co., The, Cuyahoga Falls, Ohio.

Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.

PULLEYS—Magnetic

Cutler-Hammer, Inc., Milwaukee.

PULLEYS—Vacuum Cup

Vacuum Cup Metal Pulley Co., Inc., Detroit, Mich.

PULVERIZERS

American Pulverizer Co., 1429 Macklind Ave., St. Louis, Mo.

Jeffrey Mfg. Co., The, Columbus, Ohio.

Whiting Corp., Harvey, Ill.

PUMPS—Acid Resisting

Duriron Co., Inc., The, 438 N. Findlay St., Dayton, Ohio.

PUMPS—Boiler Feed

Aldrich Pump Co., The, Allentown, Pa.

Ingersoll-Rand Co. (Cameron), 11 Broadway, N. Y. C.

PUMPS—Centrifugal

Aldrich Pump Co., The, Allentown, Pa.

Fairbanks, Morse & Co., Chicago.

Ingersoll-Rand Co. (Cameron), 11 Broadway, N. Y. C.

Pennsylvania Pump & Compressor Co., Easton, Pa.

Rumsey Pump Corp., Seneca Falls, N. Y.

Ruthman Machinery Co., Cincinnati.

Tomkins-Johnson Co., The, Jackson, Mich.

Worthington Pump & Machinery Corp., Harrison, N. J.

PUMPS—Coolant

Ruthman Machinery Co., Cincinnati.

PUMPS—Electric

Fairbanks, Morse & Co., Chicago.

PUMPS—Hydraulic

Aldrich Pump Co., The, Allentown, Pa.

American Engineering Co., Philadelphia.

Elmes, Chas. F., Engng. Wks., Chicago.

Fairbanks, Morse & Co., Chicago.

Lake Erie Engineering Corp., 68 Kenmore St., Buffalo, N. Y.

Rumsey Pump Corp., Seneca Falls, N. Y.

Worthington Pump & Machinery Corp., Harrison, N. J.

PUMPS—Power

Fairbanks, Morse & Co., Chicago.

Worthington Pump & Machinery Corp., Harrison, N. J.

PUMPS—Rotary Positive, Centrifugal & Turbine

Crane Co., Chicago.

PUMPS—Steam

Fairbanks, Morse & Co., Chicago.

Ingersoll-Rand Co. (Cameron), 11 Broadway, N. Y. C.

Worthington Pump & Machinery Corp., Harrison, N. J.

PUMPS—Vacuum

Pennsylvania Pump & Compressor Co., Easton, Pa.

Worthington Pump & Machinery Corp., Harrison, N. J.

PUNCHES & DIES

Cleveland Steel Tool Co., The, 660 E. 82d St., Cleveland, Ohio.

PUNCHING AND SHEARING MACHINES

Beatty Mch. & Mfg. Co., 936-150th St., Hammond, Ind.

Bertsch & Co., Cambridge City, Ind.

Cincinnati (Ohio) Shaper Co., The.

Excelsior Tool & Mach. Co., E. St. Louis, Ill.

G. D. S. Shearing & Punching Machine Co., 101 Walker St., N. Y. C.

Niagara Machine & Tools Works, Buffalo, N. Y.

Pels, Henry, & Co., Inc., 90 West St., N. Y. C.

Schatz Mfg. Co., The, Poughkeepsie, N. Y.

Thomas Mach. Mfg. Co., Pittsburgh.

PYROMETERS—Indicating

Brown Instrument Co., The, Philadelphia, Pa.

Hoskins Mfg. Co., Detroit, Mich.

Leeds & Northrup Co., Philadelphia.

RAIL SPLICE BARS

Ames, W., & Co., Jersey City, N. J.

RAILS

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Foster, L. B., Co., Inc., Pittsburgh.

Frank, M. K., 480 Lexington Ave., N. Y. C.

Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

RAILS—Relaying

Hyman-Michaels Co., Chicago.

Iron & Steel Products, Inc., Chicago.

Sherwood, E. C., 50 Church St., N. Y. C.

RAILWAY EQUIPMENT & SUPPLIES

Fairbanks, Morse & Co., Chicago.

Iron & Steel Products, Inc., Chicago.

REAMERS

Cleveland (Ohio) Twist Drill Co., The.

Greenfield (Mass.) Tap & Die Corp.

Morse Twist Drill & Mch. Co., New Bedford, Mass.

Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

REAMING MACHINES

Blanchard Machine Co., The, Cambridge, Mass.

RECORDERS—Furnace Atmosphere

Brown Instrument Co., The, Philadelphia, Pa.

REELS—For Coil Steel

Littell, F. J., Mch. Co., Chicago.

REFRACTORIES

Babcock & Wilcox Co., The, 85 Liberty St., New York City.

Cleveland (Ohio) Quarries Co., The.

Illinois Clay Products Co., Joliet, Ill.

REGULATORS—Compressed Gas

Air Reduction Sales Co., 60 East 42nd St., N. Y. C.

Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.

REINFORCEMENT FABRIC—Concrete

Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

Products Index

RIDDLES—Foundry
Ludlow-Saylor Wire Co., St. Louis, Mo.

RINGS—Iron or Steel
Midvale Co., The, Nicetown, Phila., Pa.
Standard Steel Wks. Co., Burnham, Pa.

RINGS—Welded
American Welding & Mfg. Co., Warren, O.

RIVET MAKING MACHINERY
Manville, E. J., Mch. Co., Waterbury, Ct.
Waterbury (Conn.) Farrel Foundry & Machine Co., The.

RIVET SETS
Cleveland Steel Tool Co., The, 660 E. 52d St., Cleveland, Ohio.

RIVETING MACHINES
Hannifin Mfg. Co., Chicago.
Shuster, F. B., Co., The, New Haven, Ct.

RIVETS
Blake & Johnson Co., The, Waterville, Ct.
Clark Bros. Bolt Co., Milldale, Conn.
Hassall, John, Inc., Clay & Oakland Sts., Bklyn., N. Y.
Progressive Mfg. Co., Torrington, Conn.
Russell, Burdall & Ward Bolt & Nut Co., Fort Chester, N. Y.

RODS—Aluminum
Aluminum Co. of America, Pittsburgh.

RODS—Brass
American Brass Co., The, Waterbury, Conn.
Bevere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

RODS—Magnesium Alloys
Dow Chemical Co., The, 921 Jefferson Ave., Midland, Mich.

RODS—Nickel Silver
American Brass Co., The, Waterbury, Conn.
Riverside (N. J.) Metal Co.
Seymour (Conn.) Mfg. Co.

RODS—Phosphor Bronze
American Brass Co., The, Waterbury, Conn.
Phosphor Bronze Smelting Co., The, Phila.
Bevere Copper & Brass, Inc., 230 Park Ave., N. Y. C.
Riverside (N. J.) Metal Co.
Seymour (Conn.) Mfg. Co.

RODS—Rustless
Rustless Iron & Steel Corp., Baltimore, Md.

RODS—Welding
Air Reduction Sales Co., 60 East 42nd St., N. Y. C.
American Brass Co., The, Waterbury, Conn.
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.
Electric Arc Cutting & Welding Co., The, Newark, N. J.
Hamischlager Corp., 4401 W. National Ave., Milwaukee.
Lincoln Electric Co., The, Cleveland.
Linde Air Prods. Co., The, 30 East 42nd St., N. Y. C.
Pittsburgh (Pa.) Steel Co.
Bevere Copper & Brass, Inc., 230 Park Ave., N. Y. C.
Una Welding, Inc., Cleveland, Ohio.
Wilson Welder & Metals Co., Inc., 60 E. 42nd St., New York City.

RODS—Wire
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.
Bethlehem (Pa.) Steel Co.
Jones & Laughlin Steel Corp., Pittsburgh.
Pittsburgh (Pa.) Steel Co.
Wickwire Brothers, Cortland, N. Y.
Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.
Youngtown (Ohio) Sheet & Tube Co., The.

ROLLING MACHINERY—Cold Rolling
Bliss, E. W. Co., Toledo, Ohio.
Cold Metal Process Co., The, Youngstown, Ohio.

ROLLING MACHINERY—Sheet Metal
Lewis Foundry & Mch. Co., Pittsburgh.
United Engineering & Fdry. Co., Pgh.

ROLLING MILL MACHINERY
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Bliss, E. W. Co., Toledo, Ohio.
Cold Metal Process Co., The, Youngstown, Ohio.

Farrel-Birmingham Co., Inc., Ansonia, Ct.
Hyde Park (Pa.) Fdry. & Mch. Co.
Lewis Foundry & Mch. Co., Pittsburgh.
Mesta Mch. Co., Pittsburgh.
Morgan Construction Co., Worcester, Mass.
National Engineering Co., The, Alliance, O.
National Roll & Fdry. Co., Avonmore, Pa.
Standard Machinery Co., Providence, R. I.
United Engineering & Fdry. Co., Pgh.
Waterbury (Ct.) Farrel Fdry. & Mch. Co., The.

ROLLS—Alloy Steel
Pittsburgh (Pa.) Rolls Corp.

ROLLS—Bending and Straightening
Baldwin-Southwark Corp., Southwark Div., Philadelphia.

Bertch & Co., Cambridge City, Ind.
Kane & Roach, Inc., Syracuse, New York.
Lake Erie Engineering Corp., 63 Kenmore St., Buffalo, N. Y.
Niagara Machine & Tool Works, Buffalo, N. Y.

Schats Mfg. Co., The, Poughkeepsie, N. Y.

ROLLS—Rubber Covered
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.

ROLLS—Sand Chilled Iron and Steel
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Hyde Park (Pa.) Fdry. & Mch. Co.

Lewis Foundry & Mch. Co., Pittsburgh.
Mackintosh-Hemphill Co., Pittsburgh.
Mesta Mch. Co., Pittsburgh.
National Roll & Fdry. Co., Avonmore, Pa.
Pittsburgh (Pa.) Rolls Corp.
United Engineering & Fdry. Co., Pgh.

ROLLS—Special Hardened
Midvale Co., The, Nicetown, Phila., Pa.

ROOFING—Special Copper Bearing Steel
Newport (Ky.) Rolling Mill Co., The.
Superior Sheet Steel Co., Canton, Ohio.

ROOFING AND SIDING—Corrugated and Plain
American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
Johns-Manville Corp., 22 East 40th St., New York City.
Newport (Ky.) Rolling Mill Co., The.
Weirton (W. Va.) Steel Co.
Youngstown (Ohio) Sheet & Tube Co., The.

ROOFING AND SIDING—Genuine Open Hearth Iron
Newport (Ky.) Rolling Mill Co.

ROOFING AND SIDING—Iron and Steel
Inland Steel Co., Chicago.
Newport (Ky.) Rolling Mill Co., The.

ROOFING & SIDING—(Zinc)—Corrugated & Plain
New Jersey Zinc Co., The, 160 Front St., N. Y. C.

ROOFING MATERIALS
Carey, Philip, Co., The, Cincinnati.

RUBBER LININGS
Goodrich, B. F. Co., The, Akron, Ohio.
Goodyear Tire & Rubber Co., Akron, Ohio.

RUBBER MOLDED PARTS
Goodyear Tire & Rubber Co., Akron, Ohio.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.
Richardson Co., The, Melrose Park, Ill.

RUST PREVENTIVES
American Chemical Paint Co., Ambler, Pa.
American Lanolin Corp., Lawrence, Mass.
Parker Rust-Proof Co., 2186 Milwaukee Ave., Detroit.

RUST PROOFING COMPOUNDS
Parker Rust-Proof Co., 2186 Milwaukee Ave., Detroit.

RUST PROOFING PROCESS
American Chemical Paint Co., Ambler, Pa.
Parker Rust-Proof Co., 2186 Milwaukee Ave., Detroit.
Udylite Co., The, Detroit.

RUST REMOVING
Nukem Products Corp., 68 Niagara St., Buffalo, N. Y.

SAND BLAST EQUIPMENT AND MACHINES
American Foundry Equipment Co., The, 401 Byrkit St., Milwaukee, Ind.
Pangborn Corporation, Hagerstown, Md.

SAND BLAST STEEL SHOT
American Foundry Equipment Co., The, 401 Byrkit St., Milwaukee, Ind.
Pittsburgh (Pa.) Crushed Steel Co.

SAND HANDLING EQUIPMENT
Bartlett, C. O.-Snow Co., The, Cleveland.
Jeffrey Mfg. Co., The, Columbus, Ohio.

SAND MILLS
Flynn & Emrich Co., Baltimore, Md.

SAWING MACHINES—Metal
Espan-Lucas Mch. Works, Phila.
Heller Machine Co., 114 Liberty St., N. Y. C.
Peerless Mch. Co., Racine, Wis.

SAWING MACHINES—Metal-Band
Continental Machine Specialties, Inc., Minneapolis, Minn.

SAWS—Band and Hack for Metal
Armstrong-Blum Mfg. Co., Chicago.
Atkins, E. C., & Co., Indianapolis.
Diston, Henry, & Sons, Inc., Philadelphia.
Wells Mfg. Corp., Three Rivers, Mich.

SAWS—Circular, Rip & Cutoff
Atkins, E. C., & Co., Indianapolis.

SAWS—Friction
Atkins, E. C., & Co., Indianapolis.
Diston, Henry, & Sons, Inc., Philadelphia.

SAWS—Hack Saw Blades
Atkins, E. C., & Co., Indianapolis.
Peerless Mch. Co., Racine, Wis.
Starrett, L. S. Co., Athol, Mass.

SAWS—Hot Metal
Atkins, E. C., & Co., Indianapolis.
Diston, Henry, & Sons, Inc., Philadelphia.

SAWS—Inserted Teeth, Cold
Diston, Henry, & Sons, Inc., Philadelphia.
Taber Mfg. Co., Philadelphia.

SAWS—Milling
Atkins, E. C., & Co., Indianapolis.
Diston, Henry, & Sons, Inc., Philadelphia.

SCALES
Exact Weight Scale Co., Columbus, Ohio.
Fairbanks, Morse & Co., Chicago.

SCREENS—Manganese Steel
Manganese Steel Forge Co., Phila., Pa.

SCREENS—Perforated Metal
Chicago Perforating Co., 2640 W. 36th Place, Chicago, Ill.

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Erdie Perforating Co., Rochester, N. Y.
Harrington & King Perforating Co., Chicago.

Hendrick Mfg. Co., Carbondale, Pa.
Mundt, Chas. & Sons, 59 Fairmount Ave., Jersey City, N. J.

SCREENS—Woven Wire
Ludlow-Saylor Wire Co., St. Louis, Mo.
Michigan Wire Cloth Co., 2117 Howard St., Detroit.

Wickwire Brothers, Cortland, N. Y.
Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

SCREW MACHINE PRODUCTS
Barnes, Wallace Co., The Div. of Associated Spring Corp., Bristol, Conn.

Blake & Johnson Co., The Waterville, Ct. Commonwealth Brass Corp., Detroit.

Eastern Mch. Screw Corp., New Haven.
Houde Engineering Corp., Buffalo, N. Y.
Metal Electric Processing Co., The Toledo, Ohio.

National Acme Co., The Cleveland.
Olson Mfg. Co., Worcester, Mass.

Ottensmiller, Wm. H. Co., Inc., York, Pa.
Peck Spring Co., The Plainville, Conn.

Progressive Mfg. Co., Torrington, Conn.
Screw Mch. Products Corp., Prov., R. I.

SCREW MACHINERY—Automatic
Cone Automatic Mach. Co., Inc., Windsor, Vt.

National Acme Co., The Cleveland.
SCREW MACHINERY—Hand

Warner & Swasey Co., The Cleveland.
SCREW MACHINERY—Multiple Spindle

Acme Machine Tool Co., Cincinnati.
Cone Automatic Mach. Co., Inc., Windsor, Vt.

National Acme Co., The Cleveland.
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SCREW STOCK

Bliss & Laughlin, Inc., Harvey, Ill.
Union Drawn Steel Co., Massillon, Ohio.

SCREWS—Cap
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Lamson & Sessions Co., The Cleveland.
National Acme Co., The Cleveland.

Ottensmiller, Wm. H. Co., Inc., York, Pa.
SCREWS—Coach or Lag

Lamson & Sessions Co., The Cleveland.
SCREWS—Machine

Blake & Johnson Co., The Waterville, Ct.
Progressive Mfg. Co., The Torrington, Ct.

SCREWS—Safety Set
Progressive Mfg. Co., The Torrington, Ct.

Standard Pressed Steel Co., Jenkintown, Pa.
SCREWS—Set

Cleveland (Ohio) Cap Screw Co., The.
National Acme Co., The Cleveland.

Ottensmiller, Wm. H. Co., Inc., York, Pa.
SCREWS—Socket Head Cap

Standard Pressed Steel Co., Jenkintown, Pa.
SCREWS—Thumb

Parker-Kalon Corp., 196 Varick St., N. Y.
SCREWS—Thumb

Wear Engineering Co., Inc., The Warren, Ohio.

SCYTHE STONES AND WHETSTONES
Carborundum Co., The Niagara Falls, N. Y.

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Ohio Electric Mfg. Co., The 5908 Maurice Ave., Cleveland.

Stearns Magnetic Mfg. Co., 635 So. 28th St., Milwaukee.

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Bay City Forge Co., Erie, Pa.
SHAFTING—Steel

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Bliss & Laughlin, Inc., Harvey, Ill.
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Union Drawn Steel Co., Massillon, Ohio.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

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SHARPERS—Vertical
Pratt & Whitney Div. Niles-Bement-Pond Co., Hartford, Conn.

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Union Drawn Steel Co., Massillon, Ohio.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

SHAPES—Wire
American Spring & Mfg. Corp., Holly, Mich.

Cuyahoga Spring Co., The Cleveland.

Eastern Tool & Mfg. Co., Bloomfield, N. J.

Grammes, L. F. & Sons, Inc., Allentown, Pa.

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Roebbling's, John A. Sons Co., Trenton, N. J.

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Schatz Mfg. Co., The Poughkeepsie, N. Y.

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United Engineering & Fdry. Co., Pgh.

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Pels, Henry & Co., Inc., 90 West St., N. Y. C.

Schatz Mfg. Co., The Poughkeepsie, N. Y.

United Engineering & Fdry. Co., Pgh.

SHEARING MACHINES—Continuous Sheet & Pack
Aetna-Standard Engineering Co., The Youngstown, Ohio.

SHEARING MACHINES—Plate
Berisch & Co., Cambridge City, Ind.

Cincinnati (Ohio) Shaper Co., The.

Dreis & Krump Mfg. Co., Chicago.

Mesta Mch. Co., Pittsburgh.

Morgan Engineering Co., The Alliance, O.

Niagara Machine & Tool Works, Buffalo, N. Y.

Pels, Henry & Co., Inc., 90 West St., N. Y. C.

Schatz Mfg. Co., The Poughkeepsie, N. Y.

United Engineering & Fdry. Co., Pgh.

SHEARING MACHINES—Sheet and Plate
Beatty Mch. & Mfg. Co., 936—150th St., Hammond, Ind.

Cincinnati (Ohio) Shaper Co., The.

Dreis & Krump Mfg. Co., Chicago.

Niagara Mach. & Tool Wks., Buffalo, N. Y.

SHEARING MACHINES—Squaring
Cincinnati (Ohio) Shaper Co., The.

Dreis & Krump Mfg. Co., Chicago.

Niagara Mach. & Tool Wks., Buffalo, N. Y.

SHEARS—Hand for Sheet Metal
Bremil Mfg. Co., Erie, Pa.

SHEET BARS
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Jones & Laughlin Steel Corp., Pittsburgh.

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Bliss, E. W. Co., Toledo, Ohio.

Cincinnati (Ohio) Shaper Co., The.

Dreis & Krump Mfg. Co., Chicago.

Kane & Roach, Inc., Syracuse, New York.

New Albany (Ind.) Mch. Mfg. Co.

Niagara Mach. & Tool Wks., Buffalo, N. Y.

V & O Press Co., Hudson, N. Y.

Waterbury (Conn.) Farrel Foundry & Machine Co., The.

SHEETS—Aluminum
Aluminum Co. of America, Pittsburgh.

SHEETS—Auto Body
American Rolling Mill Co., Middletown, O.

Bethlehem (Pa.) Steel Co.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Inland Steel Co., Chicago.

Republic Steel Corp., Cleveland, Ohio.

Youngstown (Ohio) Sheet & Tube Co., The.

SHEETS—Black
American Rolling Mill Co., Middletown, O.

Bethlehem (Pa.) Steel Co.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Granite City (Ill.) Steel Co.

Ingersoll Steel & Disc Co., Chicago.

Inland Steel Co., Chicago.

Newport (Ky.) Rolling Mill Co., The.

Republic Steel Corp., Cleveland, Ohio.

Ryerson, Jos. T. & Son, Inc., Chicago.

Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.

Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

Weirton (W. Va.) Steel Co.

SHEETS—Blue Annealed
Alan Wood Steel Co., Conshohocken, Pa.

American Rolling Mill Co., Middletown, O.

Bethlehem (Pa.) Steel Co.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Granite City (Ill.) Steel Co.

Great Lakes Steel Corp., Detroit.

Newport (Ky.) Rolling Mill Co., The.

Ryerson, Jos. T. & Son, Inc., Chicago.

Wairton (W. Va.) Steel Co.

Worth Steel Co., Claymont, Del.

SHEETS—Bronze, Copper, Nickel, Silver or Phosphor Bronze
American Brass Co., The Waterbury, Conn.

Phosphor Bronze Smelting Co., The Phila.

Revere Copper & Brass, Inc., 230 Park Ave., N. Y. C.

Riverside (N. J.) Metal Co.

Seymour (Conn.) Mfg. Co.

SHEETS—Chrome
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

SHEETS—Chrome Nickel
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

SHEETS—Cold Rolled
American Rolling Mill Co., Middletown, O.

Bethlehem (Pa.) Steel Co.

Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

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Inland Steel Co., Chicago.
Newport (Ky.) Rolling Mill Co., The.

SHEETS—Electrical
American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Newport (Ky.) Rolling Mill Co., The.
Republic Steel Corp., Cleveland, Ohio.

SHEETS—Enameling
American Rolling Mill Co., Middletown, O.
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.
Great Lakes Steel Corp., Detroit.
Inland Steel Co., Chicago.

Newport (Ky.) Rolling Mill Co., The.

SHEETS—For Drawing and Stamping
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Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Newport (Ky.) Rolling Mill Co., The.
Republic Steel Corp., Cleveland, Ohio.
Ryerson, Jos. T., & Son, Inc., Chicago.
Superior Sheet Steel Co., Canton, Ohio.
Worth Steel Co., Claymont, Del.

SHEETS—Full Finished
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Newport (Ky.) Rolling Mill Co., The.
Republic Steel Corp., Cleveland, Ohio.
Youngstown (Ohio) Sheet & Tube Co., The.

SHEETS—Galvanized, Flat and Corrugated
American Rolling Mill Co., Middletown, O.
Bethlehem (Pa.) Steel Co. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.
Continental Steel Corp., Kokomo, Ind.
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Inland Steel Co., Chicago.

Newport (Ky.) Rolling Mill Co., The.
Republic Steel Corp., Cleveland, Ohio.
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Tennessee Coal, Iron & Railroad Co. (U. S. Steel Corp. Subsidiary), Birmingham, Ala.

Weirton (W. Va.) Steel Co.
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SHEETS—Long Term
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Newport (Ky.) Rolling Mill Co., The.
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SHEETS—Magnesium Alloys
Dow Chemical Co., The, 921 Jefferson Ave., Midland, Mich.

SHEETS—Metal Furniture
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Newport (Ky.) Rolling Mill Co., The.
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SPECIAL MACHINERY
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Bullard Co., The, Bridgeport, Conn.
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James, D. O., Mfg. Co., Chicago.
Jones, W. A., Fdry. & Mch. Co., 4401 Roosevelt Rd., Chicago.
Link-Belt Co., Chicago.
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SPRAYERS—Metal
Metals Coating Co. of America, Phila., Pa.

SPRAYERS—Paint
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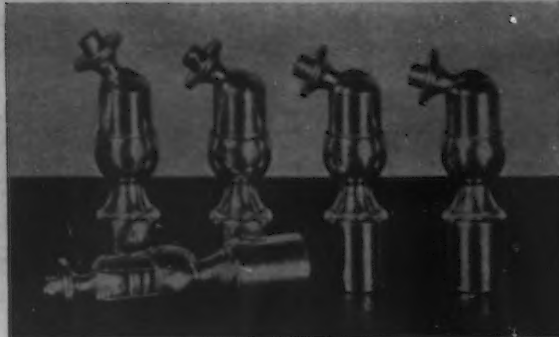
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Sleeper & Hartley, Inc., Worcester, Mass.

SPRINGS—Car
Miller & Van Winkle, Inc., 18 Bridge St., Brooklyn, N. Y.

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Barnes, Wallace Co., The, Div. of Associated Spring Corp., Bristol, Conn.
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Gibson, Wm. D., Co., Div. of Associated Spring Corp., Chicago.
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Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

SPROCKETS
Baldwin-Duckworth Chain Corp., Springfield, Mass.
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Morse Chain Co., Ithaca, New York.
Whitney Chain & Mfg. Co., Hartford, Ct.

STAMPINGS OR DRAWINGS—Metal
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Barnes, Wallace Co., The, Div. of Associated Spring Corp., Bristol, Conn.
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Latrobe (Pa.) Electric Steel Co.
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Ryerson, Jos. T., & Son, Inc., Chicago.
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Vanadium-Alloys Steel Co., Latrobe, Pa.
Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

STEEL—Alloy, Cold Drawn
Bliss & Laughlin, Inc., Harvey, Ill.
Union Drawn Steel Co., Massillon, Ohio.
Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL—Bright Finished
Bliss & Laughlin, Inc., Harvey, Ill.
Union Drawn Steel Co., Massillon, Ohio.

STEEL—Carbon
Andrews Steel Co., The, Newport, Ky.
Bethlehem (Pa.) Steel Co.
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Harrisburg (Pa.) Steel Corp.
Ingersoll Steel & Disc Co., Chicago.
Latrobe (Pa.) Electric Steel Co.

STEEL—Carbon Vanadium
Andrews Steel Co., The, Newport, Ky.
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome
Andrews Steel Co., The, Newport, Ky.
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome Manganese
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome Nickel
Andrews Steel Co., The, Newport, Ky.
Harrisburg (Pa.) Steel Corp.
Latrobe (Pa.) Electric Steel Co.

STEEL—Chrome Nickel Silver
Ingersoll Steel & Disc Co., Chicago.

STEEL—Chrome Vanadium
Andrews Steel Co., The, Newport, Ky.
Harrisburg (Pa.) Steel Corp.
Latrobe (Pa.) Electric Steel Co.

STEEL—Cobalt
Darwin & Milner, Inc., Cleveland.

STEEL—Cold Drawn
Bliss & Laughlin, Inc., Harvey, Ill.
Jones & Laughlin Steel Corp., Pittsburgh.
Latrobe (Pa.) Electric Steel Co.
Rathbone, A. B., & J., Palmer, Mass.
Ryerson, Joseph T., & Son, Inc., Chicago.
Union Drawn Steel Co., Massillon, Ohio.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL—Cold Rolled Strips
Acme Steel Co., Chicago.
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.
Athena Steel Co., Clifton, N. J.
Bethlehem (Pa.) Steel Co.
Cold Metal Process Co., The, Youngstown, Ohio.

Griffin Mfg. Co., Erie, Pa.
Latrobe (Pa.) Electric Steel Co.
Republic Steel Corp., Cleveland, Ohio.
Ryerson, Jos. T., & Son, Inc., Chicago.
Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
Stanley Works, The, New Britain, Conn.: Bridgeport, Conn.
Steel & Tubes, Inc., Cleveland.
Superior Steel Corp., Grant Bldg., Pgh.
Thomas Steel Co., The, Warren, Ohio.
Weirton (W. Va.) Steel Co.
Wetherell Bros. Co., Cambridge, 39, Mass.

STEEL—Cold Rolled Strips, Electro Coated
Thomas Steel Co., The, Warren, Ohio.

STEEL—Cold Rolled Strips, Electro-Galvanized
Acme Steel Co., Chicago, Ill.
Thomas Steel Co., The, Warren, Ohio.

STEEL—Cold Rolled Strips, Electro Tin Coated
Thomas Steel Co., The, Warren, Ohio.

STEEL—Cold Rolled Strips, Stainless
Acme Steel Co., Chicago.
Griffin Mfg. Co., Erie, Pa.

STEEL—Corrosion Resisting
Midvale Co., The, Nicetown, Phila., Pa.

STEEL—Crucible
Jessop Steel Co., Washington, Pa.
Vanadium-Alloys Steel Co., Latrobe, Pa.

STEEL—Cutlery
Jessop Steel Co., Washington, Pa.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.

STEEL—Die
Andrews Steel Co., The, Newport, Ky.
Diston, Henry, & Sons, Inc., Philadelphia.
Jessop, Wm., & Sons, Inc., 121 Varick St., N. Y. C.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.
Milne, A., & Co., 745 Washington St., N. Y. C.

STEEL—Drill
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.
Milne, A., & Co., 745 Washington St., N. Y. C.

STEEL—Electric
Diston, Henry, & Sons, Inc., Philadelphia.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.
Timken Roller Bearing Co., The, Canton, O.
Timken Steel & Tube Div., The Timken Roller Bearing Co., Canton, O.
Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.

STEEL—High Speed
Bethlehem (Pa.) Steel Company.
Ingersoll Steel & Disc Co., Chicago.
Jessop Steel Co., Washington, Pa.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.
Milne, A., & Co., 745 Washington St., N. Y. C.
Vanadium-Alloys Steel Co., Latrobe, Pa.

STEEL—Hot Rolled Strips
Acme Steel Co., Chicago.
Bethlehem (Pa.) Steel Co.
Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.

Great Lakes Steel Corp., Detroit.
Inland Steel Co., Chicago.
Laclede Steel Co., St. Louis, Mo.
Latrobe (Pa.) Electric Steel Co.
Republic Steel Corp., Cleveland, Ohio.
Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
Stanley Works, The, New Britain, Conn.: Bridgeport, Conn.
Steel & Tubes, Inc., Cleveland.
Superior Steel Corp., Grant Bldg., Pgh.
Weirton (W. Va.) Steel Co.

STEEL—Hot Rolled Strips, Electro Zinc Coated
Thomas Steel Co., The, Warren, Ohio.

STEEL—Hot Rolled Strips, Galvanized
Acme Steel Co., Chicago.

STEEL—Magnet
Latrobe (Pa.) Electric Steel Co.

STEEL—Nickel
Andrews Steel Co., The, Newport, Ky.

STEEL—Open Hearth
Andrews Steel Co., The, Newport, Ky.
Pittsburgh (Pa.) Steel Co.
Timken Roller Bearing Co., The, Canton, O.
Timken Steel & Tube Div., The Timken Roller Bearing Co., Canton, O.

STEEL—Rolled Manganese
Manganese Steel Forge Co., Phila.

STEEL—Rustless
Acme Steel Co., Chicago.
Griffin Mfg. Co., Erie, Pa.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.
Rustless Iron & Steel Corp., Baltimore, Md.

STEEL—Screw
Bliss & Laughlin, Inc., Harvey, Ill.
Timken Roller Bearing Co., The, Canton, O.
Timken Steel & Tube Div., The Timken Roller Bearing Co., Canton, O.
Union Drawn Steel Co., Massillon, Ohio.
Wyckoff Drawn Steel Co., Pittsburgh, Pa.

STEEL—Special Analysis
Andrews Steel Co., The, Newport, Ky.
Harrisburg (Pa.) Steel Corp.
Latrobe (Pa.) Electric Steel Co.
Ludlum Steel Co., Watervliet, N. Y.
Republic Steel Corp., Cleveland, Ohio.
Timken Roller Bearing Co., The, Canton, O.
Timken Steel & Tube Div., The Timken Roller Bearing Co., Canton, O.

STEEL—Spring
Athena Steel Co., Clifton, N. J.
Barnes-Gibson-Raymond, Detroit Plant.
Div. of Associated Spring Corp.
Barnes, Wallace, Co., The, Div. of Associated Spring Corp., Bristol, Conn.
Gibson, Wm. D., Co., Div. of Associated Spring Corp., Chicago.
Great Lakes Steel Corp., Detroit.
Republic Steel Corp., Cleveland, Ohio.
Timken Roller Bearing Co., The, Canton, O.
Timken Steel & Tube Div., The Timken Roller Bearing Co., Canton, O.

STEEL—Stainless
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Bethlehem (Pa.) Steel Company.

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 Republic Steel Corp., Cleveland, Ohio.
 Ryerson, Jos. T., & Sons, Inc., Chicago.
 Scully Steel Products Co. (U. S. Steel Corp. Subsidiary), Chicago.
 Superior Steel Corp., Grant Bldg., Pittsburgh.
 Union Drawn Steel Co., Massillon, Ohio.
 Wetherell Bros. Co., Cambridge, 39, Mass.

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 Ingersoll Steel & Disc Co., Chicago.

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 Bisset Steel Co., The, Cleveland.
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 Diston, Henry & Sons, Inc., Philadelphia.
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 Vanadium-Alloys Steel Co., Latrobe, Pa.
 Wheelock, Lovejoy & Co., Inc., Cambridge, Mass.
 Windau Steel Co., Cleveland.

STEEL—Tool, Special Shapes
 Forging & Casting Corp., The, Ferndale, Mich.
 Latrobe (Pa.) Electric Steel Co.

STEEL—Vanadium
 Andrews Steel Co., The, Newport, Ky.
 Latrobe (Pa.) Electric Steel Co.

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 Babcock & Wilcox, The, 85 Liberty St., New York City.
 Whiting Corp., Harvey, Ill.

STOP WATCHES
 Stillman, M. J., Co., Inc., Chicago.

STOPS—Crane Limit
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STUDS
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SUPERHEATERS
 Babcock & Wilcox Co., The, 85 Liberty St., New York City.

SWAGING MACHINES
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 Torrington (Conn.) Company.

SWITCHES—Electric
 Westinghouse Elec. & Mfg. Co., East Pgh.

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 Nukem Prods. Corp., 68 Niagara St., Buffalo, N. Y.

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 Goodyear Tire & Rubber Co., Akron, Ohio.
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TANKS—Alkali Cleaning
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 Petroleum Iron Works Co., The, Sharon, Pa.
 Seale, Wm. B., & Sons, Co., Pgh.

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 Dietzel Lead Lining Co., Pittsburgh.

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 Goodyear Tire & Rubber Co., Akron, Ohio.
 Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc., The, 2 Townsend St., Passaic, N. J.

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 Blaw-Knox Co., Pittsburgh.
 National Tube Co. (U. S. Steel Corp. Subsidiary), Pittsburgh.
 Petroleum Iron Works Co., The, Sharon, Pa.
 Seale, Wm. B., & Sons Co., Pgh.

TAPPING MACHINES
 Baker Bros. Inc., Toledo, Ohio.
 Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit.

TAPS—Collapsing
 Landis Mach. Co., Inc., Waynesboro, Pa.
 Murchey Machine & Tool Co., Detroit.
 National Acme Co., The, Cleveland.

TAPS AND DIES
 Greenfield (Mass.) Tap & Die Corp.
 Landis Mach. Co., Inc., Waynesboro, Pa.
 Morse Twist Drill & Mch. Co., New Bedford, Mass.

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TERNE PLATES
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 Weirton (W. Va.) Steel Co.

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 Weston Electrical Instrument Corp., Newark, N. J.

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 Chace, W. M., Co., 1605 Beard Ave., Detroit.

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 Manville, E. J., Mch. Co., Waterbury, Ct.
 Nilson, A. H., Mch. Co., Bridgeport, Ct.
 Waterbury (Ct.) Farrel Fdry. & Mch. Co., The.

THREADING MACHINES
 Eastern Mch. Screw Corp., New Haven, Conn.
 Landis Mch. Co., Inc., Waynesboro, Pa.

THREADING MACHINES—Automatic
 Landis Mch. Co., Inc., Waynesboro, Pa.

THREADING MACHINES—Belt
 Murchey Machine & Tool Co., Detroit.

TIE PLATES
 Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
 Weirton (W. Va.) Steel Co.

TIES—SALE
 Acme Steel Co., Chicago, Ill.

TIMING INSTRUMENTS
 Stillman, M. J., Co., Inc., Chicago.

TIN PLATE
 Carnegie-Illinois Steel Corp. (U. S. Steel Corp. Subsidiary), Pittsburgh & Chicago.
 Granite City (Ill.) Steel Co.
 Inland Steel Co., Chicago.

TIN PLATE MACHINERY
 Aetna-Standard Engineering Co., The, Youngstown, Ohio.
 Wean Engineering Co., Inc., The, Warren, Ohio.

TINNING EQUIPMENT—Sheets
 Wean Engineering Co., Inc., The, Warren, Ohio.

TONGS—Automatic
 Heppenstall Co., Pittsburgh.

TOOL BITS
 Carboly Co., Inc., 2985 E. Jefferson Ave., Detroit.

TOOL HOLDERS
 Armstrong Bros. Tool Co., Chicago.
 Williams, J. H., & Co., Buffalo, N. Y.

TOOLS—Lathe
 Armstrong Bros. Tool Co., Chicago.
 Carboly Co., Inc., 2985 E. Jefferson Ave., Detroit.

TOOLS—Metal Cutting
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 Starrett, L. S., Co., Athol, Mass.

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Spring Washer Industry, 616 Wrigley Bldg., Chicago, Ill.
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WELDING AND CUTTING MACHINES AND EQUIPMENT—Oxy-Acetylene
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WELDING MACHINES—Spot
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Thomson-Gibb Elec. Welding Co., Lynn, Mass.

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Electric Arc Cutting & Welding Co., The, Newark, N. J.

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Standard Steel Wks. Co., Burnham, Pa.

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WIRE—Flat, Round, Square or Special Shapes
American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.

Barnes, Wallace Co., The, Div. of Associated Spring Corp., Bristol, Conn.

Pago Steel & Wire Div., American Chain & Cable Co., Inc., Monessen, Pa.

Roebbling's, John A., Sons Co., Trenton, N. J.
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Wickwire Bros., Cortland, N. Y.
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Roebbling's, John A., Sons Co., Trenton, N. J.
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Webb Wire Works, New Brunswick, N. J.

Wickwire Spencer Steel Co., 41 East 42nd St., N. Y. C.

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WIRE—Special Drawn Shapes
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WIRE—Spring
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Barnes, Wallace Co., The, Div. of Associated Spring Corp., Bristol, Conn.

Columbia Steel Co. (U. S. Steel Corp. Subsidiary), San Francisco, Calif.

Jones & Laughlin Steel Corp., Pittsburgh.
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Roebbling's, John A., Sons Co., Trenton, N. J.
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WIRE—Spring (Muscle)
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Michigan Wire Cloth Co., 2117 Howard St., Detroit, Mich.

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Manville, E. J., Mch. Co., Waterbury, Ct.
Nilson, A. H., Mch. Co., Bridgeport, Ct.

Sleeper & Hartley, Inc., Worcester, Mass.

WIRE MILL MACHINERY AND EQUIPMENT
Morgan Construction Co., Worcester, Mass.

Sleeper & Hartley, Inc., Worcester, Mass.

WIRE NAIL MACHINERY
Sleeper & Hartley, Inc., Worcester, Mass.

WIRE PRODUCTS
American Spring & Mfg. Corp., Holly, Mich.

American Steel & Wire Co. (U. S. Steel Corp. Subsidiary), Chicago.

Buffalo (N. Y.) Wire Wks. Co., Inc.

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1, 2, 3, 4, 6 spdl. Henry & Wright
32" Cinn.-Bickford Sild. Hd.
No. 2 Colburn, 1, 2, 3 & 4 Spdl.
Nos. 121, 314, 513 Baker
No. 210—1 and 3 spdl. Barnes
No. D-5 Colburn
No. 2 Western Multiple
No. 14 Nates Multiple
No. 4 Baush Multiple
Radial—4" Cinn.-Bickford Plain
4" American Triple Purpose
5" American Univ. M.D.
6" Western Triple Grd.
6" American Triple Purpose
6" Cinn.-Bickford full univ.
Gear Cutters, No. 18-H Gould & Eberhardt
No. 2, No. 3, No. 12 Barber-Colman
No. 18 H8 Gould & Eberhardt
11" Gleason Bevel Gear Planer
No. 3—26" Brown & Sharpe
No. 4—48" Brown & Sharpe
No. 6—60", No. 8—72", Brown & Sharpe
96" Newton Heavy Duty
Nos. 0, 61, 62, 65, 615, 825 Fellows
12"x72" G. & E. Rask Cutter
Grinders, Helm Centerless
16"x48" Landis Crankshaft
10"x36", 52" Landis, plain M.D.
20"x168" Landis, plain M.D.
28"x96" Landis, plain
No. 13 B. & S. Univ. Cutter & Tool
No. 4—12"x66" Landis Universal
No. 70 Heald Internal
No. 1 1/2" Landis, Internal
No. 10 Blanchard, M.D.
No. 16-A Blanchard Surface
15"x17"x6", 8" Norton, O.S. surf., mag. chuck

MOTOR DRIVE NORTON GRINDERS

8"x32"	10"x96"
18"x18"	14"x36"
10"x24"	14"x50"
10"x36"	14"x72"
10"x50"	16"x50"
10"x72"	18"x96"
18"x144"	

Lathes, No. 3 Lodge & Shipley Duomatic
14"x 6" American, grd. hd., Taper Attach.
14"x 6" Lodge & Shipley
16"x 8" Lodge & Shipley, Taper Attach.
18"x 8" Lodge & Shipley, sel. grd. hd., T.A.
20"x14" L. & S., sel. grd. hd.
24"x10", 14" American
24"x12" Lodge & Shipley, sel. grd. hd.
24"x16" American Grd. Hd., T.A.
25"x28" LeBlond Heavy Duty
30"x10", 14" LeBlond Crankshaft
30"x20" American grd. hd.
36"x18" Lodge & Shipley, patent head
36"x30" Rehn Larson, grd. head
54"x23" Johnson, triple geared
66"x21" Putnam, triple geared
Mills, No. 24 Hvy. Ohio, plain
No. 2, No. 3, No. 3-S Cincinnati, plain
No. 2-B, No. 3-S, No. 4-B, S. & S., plain
No. 4 Cincinnati, plain
No. 1 1/2", No. 2 B. & S. Universal
No. 2-BB Milwaukee Universal
No. 3, No. 4 Cincinnati Universal
No. 2, No. 3 Cincinnati, H.P. Vert.
No. 3-B, No. 4 Milwaukee Vert.
No. 3 Sundstrand Rigidmill
No. 5—48" Cincinnati Hydromatic
No. 4 and No. 8 Lees-Bradner Thread
Hanson Whitney Thread
24"x24"x12" Ingersoll Slab
36"x36"x12" Newton Duplex
38"x44"x20" Ingersoll Slab
48"x36"x18" Ingersoll Adl. Rail
Planers, 24"x24"x6" American
30"x30"x 6" and 18" Cincinnati
30"x30"x14" Gray, Arr. Rev., M.D.
36"x36"x12" and 24" Gray
30"x56"x 8", 12", 18" Cincinnati
36"x36"x14"—24" Cleveland Open Side
42"x42"x30" Niles-Bement-Pond, arr. rev., M.D.
48"x48"x10" Detrick & Harvey, O. S.
48"x48"x14" Liberty Open Side
48"x48"x16" Niles-Bement-Pond
60"x48"x16" Gray, arr. rev., M.D.
72"x60"x16" American
Presses, No. 108 Bliss Die, Crank
No. 173-A Consolidated Dble. Crank
Shapers, 16" Gould & Eberhardt
16" & 20" Stockbridge
20" & 24" Gould & Eberhardt
Turret Lathes, No. 4 W. & S. Univ. Turret
No. 3 Cinn.-Ame., A.O. & B.F.
No. 3-A Warner & Swasey
No. 4-A Warner & Swasey 7 1/4" H.S.
No. 4-L Gisholt 9 1/4" H.S.

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DETROIT & HARVEY 5" bar

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KING 60"; 2 swivel heads
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NILES BEMENT POND 42"—44"—51"—53"
POND 90"; 2 hds.

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PUTNAM 36"x28", 3 step cone, DBG.
PUTNAM 36"x28", Grd. Head—Nearly New
BRIDGEFORD 36"x60" comb. boring and turning
BRIDGEFORD 36"x60" boring
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McCABE 27-49x16" Double Spindle
LOGGE & SHIPLEY 24"x10" cone dr.
GREAVES KLUSMAN 16"x8" motor-in-base
LOGGE & SHIPLEY 36"x16" grd. hd.

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LANDIS 20"x10" Plain
LANDIS 20x132 cylindrical
NORTON 14x72, 14x96 Plain Cyl.
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DIAMOND 84" Face
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WELDER. 20 KW. Federal spot, 16" & 24" tht.
WELDER. 20 KW. Thompson spot, 15" tht.
WELDER. 18 KVA Amer. Elec. Fusion MD
spot
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WELDER. 10 KVA Winfield spot, 15" tht.
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10" Ryerson, Belt Driven. Top Roll 12" dia. Bottom Roll 9" dia. Capacity 3/4" Plate.
20" Wickes, Motor Driven. Top Roll 20" dia. Bottom Roll 14" dia. Capacity 1/2" Plate.
25" Niles, Arranged for Motor Drive. Top Roll 24 1/2" dia. Bottom Roll 18" dia. Capacity 1" Plate.
26" Williamette, Motor Driven. Top Roll 25" dia. Bottom Roll 20" dia. Capacity 1" Plate.
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25,000 lb. Waterbury Farrel Chain Draw Bench, Belt Driven. 20" Draw, Chain 6" wide

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30" Roller Leveller, Motor Driven. 7 Rolls 5" dia.
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60" Newbold, Motor Driven. Capacity 3/16" Plate

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OVERHEAD ELECTRIC TRAVELING

3 ton P. & H.,	29 1/2"	span, Motors 220/3/60
15 ton Whiting,	45"	span, Motors 220/3/60
10 ton Whiting,	47 1/2"	span, Motors 220/3/60
50 ton Shaw,	46 1/2"	span, Motors 440/3/60
15 ton Bedford,	50"	span, Motors 220/3/60
20 ton Bedford,	50"	span, Motors 220/3/60
20 ton P. & H.,	50"	span, Motors 220/3/60
15 ton Champion,	57"	span, Motors 440/3/60
10 ton Niles,	60"	span, Motors 440/3/60

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35 ton Norton,	28"	span, Motors 220 volt DC
30 ton Niles,	34 1/2"	span, Motors 220 volt DC
with two hoisting hooks		
5 ton P. & H.,	37 1/2"	span, Motors 220 volt DC
7 1/2 ton P. & H.,	38 1/2"	span, Motors 220 volt DC
5 ton Shaw,	40"	span, Motors 110 volt DC
25 ton Niles,	40"	span, Motors 220 volt DC
10 ton Morgan,	42"	span, Motors 220 volt DC
15 ton Whiting,	45"	span, Motors 220 volt DC
10 ton Morgan,	48 1/4"	span, Motors 220 volt DC
15 ton Shepard,	50"	span, Motors 220 volt DC
5 ton Alliance,	50"	span, Motors 220 volt DC
15 ton Bedford,	50"	span, Motors 220 volt DC
25 ton Morgan,	50"	span, Motors 110 volt DC
20 ton Shaw,	55"	span, Motors 220 volt DC
10 ton Cleveland,	58 1/2"	span, Motors 220 volt DC
with two 5 ton Trolleys		
15 ton Morgan,	60"	span, Motors 220 volt DC
10 ton Cleveland,	58 1/2"	span, Motors 220 volt DC
with two 5 ton Trolleys		
25 ton Morgan,	65"	span, Motors 220 volt DC
with smaller auxiliary hoist		
25 ton P. & H.,	65"	span, Motors 220 volt DC
with 5 ton auxiliary hoist		
20 ton Shaw (2),	66 1/2"	span, Motors 220 volt DC
with or without runway		
10 ton P. & H.,	70"	span, Motors 220 volt DC
with 3 ton auxiliary hoist		
40 ton Niles,	71 1/2"	span, Motors 220 volt DC
with 5 ton auxiliary hoist		
5 ton P. & H.,	77"	span, Motors 220 volt DC

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70" Bertsch, Arranged for Motor Drive. 10" Gap. Capacity 3/8" Plate. Equipped with cam operated holddown clamp with cushioning springs.
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No. 76 1/2" Bliss Straight Side, 8" Stroke. Distance between uprights 21"
No. 304 Bliss Straight Side, 4" Stroke. Distance between uprights 18"
No. 265 1/2" Toledo Toggle Drawing, Stroke of Blankholder 15 1/4", Stroke of Punch Slide 28"; Bolster Plate 60 1/4"x34"
No. 796 1/2" Toledo Toggle Drawing, Stroke of Blankholder 21 1/4"; Stroke of Punch Slide 33"; Bolster Plate 60"x108"

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700 ton Robertson Vertical Hydraulic Extrusion Press for Lead

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9"x10" Columbia Two Stand, Two & Three High Rolling Mill, Arranged for Motor Drive
9"x14" Cramp Single Stand, Two High Rolling Mill
9"x14" Columbia Two Stand, Two & Three High Rolling Mill, Arranged for Motor Drive
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52" Ryerson High Speed Friction Saw, Hydraulic Feed, Motor Driven. Work Table 34"x38"

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1—82" N-B-Pond Vertical
1—33" N-B-Pond Vertical
1—60" Colburn Vertical
1—60" Cincinnati Vertical
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1—36" Bullard Rapid Production

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1—30" x 25" Lodge & Shipley
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1—26" x 20" Sidney, Geared Head

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1—18" x 84" Landis Plain

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GRINDER, No. 70 Head Duplex, Double Spindle

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with motor, 1 rail head and 1 side head

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SHEAR, 10" 1/2" Pittsburgh, M.D.

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72" X 60" X 18"

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For Immediate Delivery

Cleveland 4 1/2" Model "M" 4-Spindle Chucking Machine, M.D. by 10 H.P. 3-60-220.

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14" Fay Automatics with back angle attachment.

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2 1/2	3/64	7/8	1.40	5	1/16	1	2.90
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2 1/2	3/32	7/8	1.40	5	1/8	1	3.30
2 1/2	1/8	7/8	1.45	5	5/32	1	3.50
3	1/32	1	1.65	5	3/16	1	3.70
3	3/64	1	1.65	6	1/16	1	3.65
3	1/16	1	1.70	6	3/32	1	4.20
3	3/32	1	1.70	6	1/8	1	4.30
3	1/8	1	1.75	6	3/16	1 1/4	5.20
3	5/32	1	1.85	7	1/16	1-1 1/4	5.00
4	1/32	1	2.15	7	3/32	1-1 1/4	6.00
4	3/64	1	2.20	7	1/8	1 1/4	6.00
4	1/16	1	2.25	7	3/16	1 1/4	6.50
4	3/32	1	2.35	8	1/8	1 1/4	8.75
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STEAM—368 ft., 500 ft., 800 ft., 1221 ft., 1640 ft., 2200 ft. & 3000 ft.

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500	G.E.	440	Synch.	1200
450	West.	440/220	Synch.	257
450/300	West.	2200	CW-Slipring	875/700
400	West.	2200	CW-Slipring	290
400	G.E.	4150/2300	MT-Slipring	390
400	West.	2300	CW-Slipring	514
300	Al. Chal.	2300	ANY-Slipring	585
300	West.	440/220	CW-Slipring	1800
250	G.E.	4000/2300	MT-Slipring	257
250	CR. WH.	440/220	128Q-Slipring	435
250	West.	440/220	CW-Slipring	585
225	Elec. Mchry.	4150/2300	3-BRQ.-Synch.	450
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(2)—3-ton Shepards,	32'0" span, 230-VDC. fl. cont.
(1)—5-ton Shepard,	40'0" span, 230-VDC.
(1)—5-ton Niles,	87'0" span, 230-VDC.
(1)—5-ton Whiting,	97'0" span, 230-VDC.
(1)—15-ton Niles,	49'0" span, 230-VDC.
(1)—15-ton Shaw,	58'0" span, 230-VDC.
(1)—20-ton Northern,	65'0" span, 230-VDC.
(1)—35-ton P&H,	38'4" span, 230-VDC.
(1)—40-ton Niles,	72'0" span, 230-VDC.
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Locomotive, Vulcan, gasoline, 12 ton, standard gauge.

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11 GA.—36 x 96	8,500
11 " 36 x 120	10,000
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11 " 48 x 120	10,300
14 " 36 x 120	10,400
14 " 48 x 96	15,800
14 " 48 x 120	12,900
16 " 36 x 96	10,200
16 " 36 x 120	10,300
16 " 36 x 108	8,700
16 " 40 x 96	15,300
16 " 44 x 96	15,800
16 " 48 x 96	15,100
16 " 48 x 108	18,900
16 " 48 x 120	10,400

C.R. PRIME, Soft, Oiled

16 GA.—36 x 120	10,300
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16 " 48 x 120	22,800
22 " 36 x 120	16,000
22 " 48 x 120	8,000

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16 GA.—25/44 x 66/108	81,500
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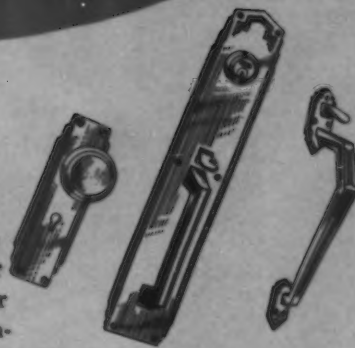


ECONOMICAL

...because they pay
EXTRA DIVIDENDS
in service

A LASTING purchase is thrifty! With solid white bronze—Nickel Silver—fittings, time is turned aside and thrifty buyers reap their reward. Continuous finger traffic, the weather and general wear and tear soon

change the appearance of hardware whose beauty is only skin deep. But Nickel Silver resists the rub of fingers and cleaning, the corrosive action of the weather, and the stresses of day to day service. Solid, with no coating to chip or peel, the Nickel Silvers are tough, durable, wear resisting and always beautiful. Their use continually pays dividends in satisfactory lifetime service.



A STEAM condenser is a unit of thrift to conserve boiler water and make it work again and again. Corrosion, erosion, high pressures and temperatures are the constant enemies of condenser life and maintenance. Therefore, many of the world's leading navies and commercial fleets, shore stations and oil refineries are increasingly using thrifty Cupro-Nickel tubes in their condensers to increase reliability and cut down overhaul and maintenance expenses.

THE best materials are thrifty! This worm gear drive with Nickel-Bronze gear and Nickel Steel worm is an excellent example. Eight of these drives were installed 15 years ago on chewing gum mixing machines demanding steady nine-hour per day service under heavy intermittent load with accompanying stresses. Caution prompted a supply of spares for emergency replacement—but they are still in storage, for after 15 years the original drives continue to prove their real worth and low, final cost. We invite consultation on the use of the alloys of Nickel in your equipment.



NICKEL
NON-FERROUS ALLOYS

THE INTERNATIONAL NICKEL COMPANY, INC., NEW YORK, N. Y.

"Let's call the STANDARD LUBRICATION ENGINEER

*...he pulled us
out of a hole before"*

No matter how efficient your plant personnel may be, lubrication difficulties do arise. There's where a Standard Lubrication Engineer fits into your organization.

Your trouble may not be in stamping or drawing. Perhaps it is excessive carbon formation in a Diesel unit, high oil consumption on a steam engine or unusual wear, overheating or leakage of lubricant in the myriad bearings, gears or drives that operate in your plant. All are serious difficulties, due to the possible loss of time, excessive repair bills and lubrication costs.

Few companies can afford to employ one individual who knows all phases of lubrication thoroughly. A Standard Lubrication Engineer is trained for that one job. He has both a technical and a practical knowledge of lubricants. His day-by-day experience in handling lubrication problems has equipped him to meet any emergency.

In addition, a certain engineer in your local Standard Oil office has specialized in the lubricating problems peculiar to your industry. That Engineer should be your lubrication consultant. His service is free. Call him today.



STANORUSTS PREVENT COSTLY CORROSION

Corrosion of parts and machines in storage or in transit amounts to a costly item in many industries.

With the development of Stanorust products all guesswork has been taken out of rust prevention methods. Seven (scientifically developed) grades provide the exact rust preventive you need from the standpoint of application as well as rust protection.

Stanorusts do not harden, crack or peel from the work, yet are easily removed when necessary. They are easily applied by spraying or dipping and form a lasting protective coating.

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LUBRICATION ENGINEERING**

**THE RIGHT
LUBRICANT
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PROPERLY
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•
TO REDUCE
COSTS**